3 Installation

Overview

This section covers installation of all Signalogic DSP Software packages using the Signalogic Software Setup Utility, which is a Windows-based program. Although Hypersignal-Macro series packages can be installed without the Software Setup Utility (see section 2.1, Installing Hypersignal, in the Hypersignal-Macro Series Users Manual, and/or section 3.2.5 below, Installing and Configuring Hypersignal Software For User Mode Operation), the same information is covered here.

NOTE: Be sure to look through section 3.1, Before You Install, before installing.

Main Topics

Before You Install

Signalogic DSP Software License Agreement

Media and Disk Space Requirements

Documentation and Media You Should Have Received

Installing Hypersignal-Macro Series Software

Installing DSPower Series Software

Configuration and Checkout of DSPower-HWLib Software

Configuration and Checkout of DSPower-Block Diagram Software

Installing and Configuring Hypersignal Software For User Mode Operation

Release Notes

Directory Structure Chart

Uninstalling

3.1 Before You Install

Before you install, please read the Signalogic DSP Software License Agreement, if you have not already done so. Also, please check the requirements listed in section 1.3, System Requirements.

NOTE: Make sure you fill out and send in your product registration card. Registration ensures you will be notified of product updates and have the fastest possible technical support response.

You may also want to make a backup copy of the diskettes you have received. The Signalogic DSP Software License Agreement allows you to copies to be made for backup and archival purposes only. For more information, see section 3.1.1, Signalogic DSP Software License Agreement.

In addition to the license agreement, you may want to read the sections below before you install your software:

1. section 3.1.2, Media and Disk Space Requirements
2. section 3.1.3, Documentation and Media You Should Have Received

3.1.1 Signalogic DSP Software License Agreement

Reprint of Signalogic DSP Software License Agreement follows. *Note that this agreement supersedes the License Agreement and limited warranty found in March, 1993 and earlier copies of the Hypersignal-Macro Users Manual.*

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3.1.2 Media and Disk Space Requirements

NOTE: ***The media and disk space requirements listed below are in addition to the requirements detailed in section 1.3, System Requirements.***

Hypersignal-Macro Series Media and Disk Space Requirements

1.44 Mbyte (3.5") floppy drive, 6 Mbyte hard disk space (4.5 Mbyte for Hypersignal-Macro NRT)

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements
DSPower-HWLib Media and Disk Space Requirements
DSPower-Block Diagram Media and Disk Space Requirements
Hypersignal-Macro Series Documentation and Media Inventory
DSPower-HWLib Documentation and Media Inventory
DSP Source Code Interface Documentation and Media Inventory
DSPower-Block Diagram Documentation and Media Inventory

DSP Source Code Media and Disk Space Requirements

1.44 Mbyte (3.5") floppy drive, 1/2 Mbyte hard disk space (does not include DSP device asm/linker/sw sim and/or C compiler, which could easily consume another 3-10 Mbyte of space)

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements
DSP Source Code Media and Disk Space Requirements
DSPower-HWLib Media and Disk Space Requirements
DSPower-Block Diagram Media and Disk Space Requirements
Hypersignal-Macro Series Documentation and Media Inventory
DSPower-HWLib Documentation and Media Inventory
DSP Source Code Interface Documentation and Media Inventory
DSPower-Block Diagram Documentation and Media Inventory

DSPower-HWLib Media and Disk Space Requirements

1.44 Mbyte (3.5") floppy drive, 2 Mbyte hard disk space

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements

DSPower-HWLib Media and Disk Space Requirements

DSPower-Block Diagram Media and Disk Space Requirements

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

DSPower-Block Diagram Media and Disk Space Requirements

1.44 Mbyte (3.5") floppy drive, 4 Mbyte hard disk space

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements

DSPower-HWLib Media and Disk Space Requirements

DSPower-Block Diagram Media and Disk Space Requirements

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

3.1.3 Documentation and Media You Should Have Received

This section contains an inventory of major items you should have received for different Signalogic DSP Software components. Choose from the list below.

Signalogic DSP Software Component Inventory

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

Hypersignal-Macro Series Documentation and Media Inventory

For all Hypersignal-Macro series packages, you should have received the following documentation: Users Manual, Tutorial, Software Reference Guide, and Hardware Reference Guide.

This documentation is delivered either as a set of four (4) books, or a set of three (3) books with Software Reference Guide and Hardware Reference Guide combined with a separator tab.

For all Hypersignal-Macro series packages, you should have received three 1.44 Mbyte diskettes. The first two diskettes contain executable, overlay, font, macro function, utility, driver, and other program support files, and the third diskette contains example waveform files.

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements

DSPower-HWLib Media and Disk Space Requirements

DSPower-Block Diagram Media and Disk Space Requirements

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

For the DSPower-HWLib software package, you should have received the Signalogic DSP Software System Guide, Users Guide, and Reference Guide.

This documentation is delivered in both online Help and printed book form. In addition, if you are using a Hypersignal package as a DSP Engine with DSPower-HWLib, then you should have received Hypersignal documentation. See Hypersignal-Macro Series Documentation and Media, above.

For the DSPower-HWLib software package, you should have received two (2) 1.44 Mbyte floppy diskettes.

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements

DSPower-HWLib Media and Disk Space Requirements

DSPower-Block Diagram Media and Disk Space Requirements

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

For a DSP Source Code Interface package, you should already have received Hypersignal documentation. Chapter 4 of the Hypersignal-Macro Series Hardware Reference Guide covers all DSP Source Code Interfaces, including ADSP-21xx, TMS320C2x, TMS320C3x, TMS320C4, TMS320C5x, DSP5600x, DSP9600x, DSP32C, DSP3210, and NEC77220.

Media for a DSP Source Code Interface package consists of one (1) 1.44 Mbyte floppy diskette.

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements

DSPower-HWLib Media and Disk Space Requirements

DSPower-Block Diagram Media and Disk Space Requirements

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

For the DSPower-Block Diagram software package, you should have received the Signalogic DSP Software System Guide, Users Guide, Reference Guide, and Tutorial.

This documentation is delivered in both online Help and printed book form. In addition, if you are using a Hypersignal package as a DSP Engine with DSPower-Block Diagram, then you should have received Hypersignal documentation. See Hypersignal-Macro Series Documentation and Media, above.

For the DSPower-Block Diagram software package, you should have received two (2) 1.44 Mbyte floppy diskettes.

Related Topics

Hypersignal-Macro Series Media and Disk Space Requirements

DSP Source Code Media and Disk Space Requirements

DSPower-HWLib Media and Disk Space Requirements

DSPower-Block Diagram Media and Disk Space Requirements

Hypersignal-Macro Series Documentation and Media Inventory

DSPower-HWLib Documentation and Media Inventory

DSP Source Code Interface Documentation and Media Inventory

DSPower-Block Diagram Documentation and Media Inventory

3.2 Installing Signalogic DSP Software

This section covers installation, configuration, and checkout of Signalogic DSP Software components. For information on using software beyond initial configuration, see the Signalogic DSP Software Users Guide, or search select one of the main Users Guide topics below:

Main Users Guide Topics

Using Hypersignal-Macro Series Software

Using DSP Source Code Interface Software

Using DSPower-HWLib and DSPower-SPLib Software

Using DSPower-Block Diagram Software

Using Engine Manager

Using Hardware Manager

3.2.1 Installing Hypersignal-Macro Series Software

If you are installing a Hypersignal-Macro series software package *only*, then you can follow the instructions below. If you are installing a Hypersignal-Macro series software package *and* a DSPower series software package, please skip to Installing DSPower Series Software, below.

When installing a Hypersignal-Macro series software package only, a simple installation method is described in Hypersignal-Macro Series Users Manual section 2.1, Installing Hypersignal. The quick form of this installation consists of these steps:

1. Copy *.* from distribution diskettes #1 and #2 to a subdirectory "X:\hsmacro", "X:\hsacous", "X:\hsmacnrt", etc.
2. Copy *.* from distribution diskette #3 to a subdirectory "X:\hsmacro\waveform", "X:\hsacous\waveform", etc. ("X" is an appropriate drive identifier for your system, "C", "D", etc.)
3. Run the appropriate batch file "hsm", "hsa", "hs", etc. at least once to ensure all files are expanded. See in section 3.2.5,
4. If you will be using DSP/analog hardware which has a memory-mapped transfer interface to the host PC, your system almost certainly will need the memory-mapped area to be "reserved" using the EMM386.EXE line in the system's CONFIG.SYS file. This is necessary to avoid conflicts with memory-resident software programs and utilities, as well as other installed hardware. For more information about this, see section 1.4.4, System Drivers and Resident Program Considerations, and EMM386.EXE Considerations (Reserving Memory Areas) in section 4.3.2, Memory-Mapped Transfer Gotchas.

NOTE: The Hypersignal-Macro Uses Manual may suggest an "X:\waveform" subdirectory for diskette #3. Use "X:\hsmacro\waveform", "X:\hsacous\waveform", etc. as explained above, instead.

For a thorough overview of Hypersignal-Macro series software installation and configuration, see Hypersignal-Macro Series Users Manual sections 2.1 through 2.5.3, or section 3.2.5, Installing and Configuring Hypersignal Software For User Mode Operation.

Related Installation Topics

Installing Hypersignal-Macro Series Software

Installing DSPower Series Software

Configuration and Checkout of DSPower-HWLib Software

Configuration and Checkout of DSPower-Block Diagram Software

Installing and Configuring Hypersignal Software For User Mode Operation

3.2.2 Installing DSPower Series Software

To install a DSPower series software package, follow the steps below:

1. Put diskette #1 into a 1.44 Mbyte (3.5") floppy drive. If you are installing both a DSPower-series package and a Hypersignal-Macro series package at the same time, *insert DSPower diskette #1*, and *not* Hypersignal diskette #1.

2. Select Program Manager | File | Run. If you are not yet familiar with the "|" notation, this means: "from the Program Manager window, pull down the 'File' menu selection, and choose 'Run').

3. Enter (using keyboard)

a:\setup <Enter>

or

b:\setup <Enter>

where choice of "a" or "b" depends on the configuration of your system's 1.44 Mbyte disk drive.

4. After the Signalogic Software Setup program initializes, you should see an "Install Options" dialog box displayed with checkboxes indicating which Signalogic DSP Software components will be installed. Make sure the checkboxes match the software packages you will be installing. If not, or you are absolutely certain that you already have a current version of a package or packages installed correctly,

then you can choose to uncheck one or more of the install options.

Important Note Depending on the Signalogic DSP Software components you have received, the installation checkboxes may also indicate a Hypersignal-Macro series software package. Although not necessary, Hypersignal-Macro series software packages can be installed and configured separately, using a simple installation method described in Hypersignal-Macro Series Users Manual section 2.1, Installing Hypersignal, and in section 3.2.5 below, Installing and Configuring Hypersignal-Macro Series Software for User Mode Operation.

5. After clicking OK on the Install Options dialog box, the Software Setup utility will prompt to verify the default subdirectory for installing files. Defaults are "C:\dspower" for DSPower series software packages and "C:\hsmacro" or "C:\hsacous" for Hypersignal-Macro series software packages. After you either affirm the default or enter a desired subdirectory, the Software Setup utility will begin installing software.

Important Note: You can specify a different subdirectory if desired, but it *must be located at the root level*, and you must *not change the names of subdirectories beneath* this choice. Doing so will cause undefined results in using Signalogic DSP Software products.

During installation, the Software Setup Utility may ask you to insert additional disks depending on the product(s) being installed. It may even ask you to re-insert a diskette that has already been used.

Important Note: If, during installation, you should see a box saying "file to be installed is older than existing file; keep existing file?", and showing statistical data from two different files with the same filename, you should select "keep the existing file". What has probably happened is a common library or DLL used by many software packages and needed by DSPower series software (such as a Borland or Microsoft control library) already exists on your hard disk drive. In such cases, this type of dialog box is displayed if the existing version is actually newer than the version the Signalogic Software Setup Utility is trying to install. This can happen if you have obtained a more recent copy of the common library by upgrading a software package, buying a new system, etc.

6. When finished, the Software Setup utility will display a final dialog box indicating successful installation. If you have installed a DSPower series package, this box will also prompt you to restart Windows. Answer yes to this question in order to allow the "Pipe.386" virtual device driver (VxD) to be made active, and the installation to fully take effect. *This is necessary for correct operation of DSPower-Block Diagram or DSPower-HWLib software when using a Hypersignal-Macro series software package as a "DSP Engine".*

If there are other applications or programs still open, then click on the "No" button, close these applications, and then exit and restart Windows manually. If the Pipe.386 VxD is not installed when you attempt to run a DSPower series package using Hypersignal software as a DSP Engine, you will get a message at some point indicating "pipe.386 VxD not loaded".

7. After software is installed, and Windows is restarted, you should see a Signalogic DSP Software group in the Program Manager window. Select one of the icons! And proceed to one of the configuration and checkout sections listed below:

8. If you will be using DSP/analog hardware which has a memory-mapped transfer interface to the host PC, your system almost certainly will require the hardware's memory-mapped area to be "reserved" using the EMM386.EXE line in the system's CONFIG.SYS file. This is necessary to avoid conflicts with memory-resident software programs and utilities, as well as other installed hardware. For more information about this, see section 1.4.4, System Drivers and Resident Program Considerations, and EMM386.EXE Considerations (Reserving Memory Areas) in section 4.3.2, Memory-Mapped Transfer Gotchas.

Related Installation Topics

Installing Hypersignal-Macro Series Software

Installing DSPower Series Software

Configuration and Checkout of DSPower-HWLib Software

Configuration and Checkout of DSPower-Block Diagram Software

Installing and Configuring Hypersignal Software For User Mode Operation

3.2.3 Configuration and Checkout of DSPower-HWLib Software

If you have installed DSPower-HWLib software, perform the following checks to make sure initial configurations are valid:

Digital Oscilloscope Demo

1. From the Signalogic DSP Software group under Program Manager, select the "HWLib Digital Scope Demo" icon.

2. You should first see the Hardware Selector dialog box, which lists supported DSP/analog hardware. Using the listbox, select the hardware type you have currently installed in your system. Make sure the base I/O address, base memory address (if applicable), and other configuration parameters are correct. See Signalogic DSP Software Users Guide section 8.2.2, DSP/Analog Hardware Configuration, for more information about configuring DSP/analog hardware. See also the appropriate hardware section in chapter 3 of the Hypersignal-Macro Series Hardware Reference Guide, for more information about specific hardware types.

NOTE: If you will be using DSP/analog hardware which requires a memory base address (i.e. memory base address not listed as 'none' in the Hardware Selector), then your system almost certainly will require the hardware's memory-mapped area to be "reserved" using the EMM386.EXE line in the system's CONFIG.SYS file. This is necessary to avoid conflicts with memory-resident software programs and utilities, as well as other installed hardware. For more information about this, see section 1.4.4, System Drivers and Resident Program Considerations, and EMM386.EXE Considerations (Reserving Memory Areas) in section 4.3.2, Memory-Mapped Transfer Gotchas.

3. A "HWLib DLL" status box should appear, and you should see status messages indicating the progress of the DScope demo initialization process. The demo first tries to open Hypersignal-Macro as a DSP Engine; if that fails, it tries to open Hypersignal-Acoustic as a DSP Engine. Upon success in either case, it attempts to do the following:

1. initialize the hardware previously selected in the Hardware Selector dialog box
2. download a default DSP executable file to the DSP hardware
3. initializes the digital oscilloscope mode in the engine, and send down several parameters needed by the DSP code for operation
4. set up a window to use to display analog input data received from the engine, and also to receive "buffer ready" messages from the engine

If the digital oscilloscope demo fails to open a DSP Engine, you may need to recompile the dscope.cpp source code and put in an explicit engine path. You can do this in the second parameter of the DSEngineOpen call. See also Users Guide section 7.2.1, Opening DSP Engines.

4. If the selected DSP/analog hardware initializes correctly, you should see a rudimentary single-trace digital oscilloscope display, with the current channel 0 analog input (from the DSP/analog hardware) displayed along the horizontal axis. If you have a signal connected to the channel 0 input, you should see it (depending on the input signal amplitude and sampling rate being used, of course!).

5. The toolbar controls in the digital oscilloscope demo can be used to set vertical scale and position, display online Help, select an RMS indicator, etc. Moving the vertical scroll bar changes the current trigger level, which is represented by a horizontal blue marker (note that there is a small hysteresis region about the horizontal axis, where the trigger mode defaults to "freerun"). Moving the horizontal scroll bar changes the timebase, or amount of points displayed in each "frame" (update) of the digital oscilloscope display. To change the sampling rate, push the toolbar "Fs" button.

6. You can change any aspect of the digital oscilloscope demo's operation by changing and recompiling the dscope.cpp source code file. Example project files to do this are provided for Borland C/C++ v3.1 (**.prj** filename extension), Borland C./C++ v4.5 (**.ide** filename extension), Microsoft Visual C/C++ v1.5 (**.mak** filename extension), and WATCOM C/C++^{32} v10.0 (**.wpj** filename extension). For detailed information, see Users Guide section 4.2, Creating Programs for DSPower-HWLib and DSPower-SPLib.

7. Consult the Signalogic DSP Software Users Guide for more information about the DLL status box (Users Guide section 7.5.3, Error/Status Window in Engine Manager), DLL calls being made in the dscope.cpp demo program (Users Guide section 7.3, DSPower-HWLib Function Overview), and the window procedure callback message structure (Users Guide section 7.4, Registering Callback Messages) needed to get and send data to and from DSP Engines and DSP/analog hardware.

Digital Tape Recorder Demo

1. From the Signalogic DSP Software group under Program Manager, select the "HWLib Digital Tape Demo" icon.

2. You should first see the Hardware Selector dialog box, which lists supported DSP/analog hardware. Using the listbox, select the hardware type you have currently installed in your system. Make sure the base I/O address, base memory address (if applicable), and other configuration parameters are correct. See Signalogic DSP Software Users Guide section 8.2.2, DSP/Analog Hardware Configuration, for more information about configuring DSP/analog hardware. See also the appropriate hardware section in chapter 3 of the Hypersignal-Macro Series Hardware Reference Guide, for more information about specific hardware types.

NOTE: If you will be using DSP/analog hardware which requires a memory base address (i.e. memory base address not listed as 'none' in the Hardware Selector), then your system almost certainly will require the hardware's memory-mapped area to be "reserved" using the EMM386.EXE line in the system's CONFIG.SYS file. This is necessary to avoid conflicts with memory-resident software programs and utilities, as well as other installed hardware. For more information about this, see section 1.4.4, System Drivers and Resident Program Considerations, and EMM386.EXE Considerations (Reserving Memory Areas) in section 4.3.2, Memory-Mapped Transfer Gotchas.

3. A "HWLib DLL" status box should appear, and you should see status messages indicating the progress of the digital tape recorder demo initialization process. The demo first tries to open Hypersignal-Macro as a DSP Engine; if that fails, it tries to open Hypersignal-Acoustic as a DSP Engine. Upon success in either case, it attempts to do the following:

1. initialize the hardware previously selected in the Hardware Selector dialog box
2. set up a window to display controls needed for the demo, and also to receive update and status messages from the engine

4. If the selected DSP/analog hardware initializes correctly, you should see a digital tape recorder set of controls displayed, along with Vu meter, output waveform filename edit box, and sampling rate and sample counter indicators.

5. You can change any aspect of the digital tape recorder demo's operation by changing and recompiling the dtape.cpp source code file. Example project files to do this are provided for Borland C/C++ v3.1 (**.prj** filename extension), Borland C./C++ v4.5 (**.ide** filename extension), Microsoft Visual C/C++ v1.5 (**.mak** filename extension), and WATCOM C/C++[32] v10.0 (**.wpj** filename extension). For detailed information, see Users Guide section 4.2, Creating Programs for DSPower-HWLib and DSPower-SPLib.

6. Consult the Signalogic DSP Software Users Guide for more information about the DLL status box (Users Guide section, 7.5.3 Error/Status Window in Engine Manager), DLL calls being made in the dtape.cpp demo program (Users Guide section 7.3, DSPower-HWLib Function Overview), the window procedure callback message structure (Users Guide section 7.4, Registering Callback Messages) needed to receive update messages such as amplitude level and sample counter from DSP Engines and DSP/analog hardware, and the CONVERSIONINFO structure (Users Guide section 4.5, Acquiring Data Using DSPower-HWLib Software) required in the DSAcquireWvfrmFile and DSGenerateWvfrmFile calls used to implement the Record and Play controls.

Related Installation Topics

Installing Hypersignal-Macro Series Software

Installing DSPower Series Software

Configuration and Checkout of DSPower-HWLib Software

Configuration and Checkout of DSPower-Block Diagram Software

Installing and Configuring Hypersignal Software For User Mode Operation

3.2.4 Configuration and Checkout of DSPower-Block Diagram Software

If you have installed DSPower-Block Diagram, perform the following checks, to make sure initial configurations are valid:

1. If you have installed a Hypersignal-Macro series software package, select the top-level menu item "Configuration", and then "DSP Engines", and set the following:

    1. The "Hypersignal DSP Engine Command Line" should be set to the subdirectory, plus program name, which reflects where the Hypersignal package is installed; if not, set this now (e.g. C:\hsmacro\hsmacro.exe, C:\hsignal\hsmacnrt.exe, C:\hsacous\hsacous.exe, etc.). ***Do not use the user mode Hypersignal batch files*** (hsm.bat, hsa.bat, etc.).
    2. The "Hypersignal Run-Time Source Path" should be the subdirectory on which the Hypersignal package is installed; if not, set this now (e.g. C:\hsmacro, C:\hsacous, etc.).
    3. Under "Directories", which is also under the "Configuration" main menu item, ensure that "Waveform Files" is set to "c:\hsmacro\waveform", "c:\hsacous\waveform", etc.; if not, set this now.

2. If you will be using MATLAB as a DSP Engine, select the top-level menu item "Configuration", and then "DSP Engines", and set the following:

    1. the "MATLAB DSP Engine Command Line" should be set to the subdirectory, plus program name, which reflects where MATLAB v4.x is installed; if not, set this now (for example, C:\matlab\bin\matlab.exe or similar).
    2. the "MATLAB Run-Time Source Path" should be the subdirectory on which MATLAB is installed; if not, set this now (e.g. C:\matlab\dspower, C:\matlab\block, etc.). We suggest creating a new subdirectory under the MATLAB subdirectory for source files generated by DSPower-Block Diagram to ensure DSPower doesn't inadvertently write over existing .m files during its process

3. under "Directories", which is also under the "Configuration" main menu item, ensure that "Waveform Files" is set to "c:\matlab\waveform" or similar; if not, set this now. If you are also using a Hypersignal-Macro series package, you can leave this line set to "c:\hsmacro\waveform", "c:\hsacous\waveform", etc.

3. Select "DSP/Analog Hardware" (also under the "Configuration" main menu item), and set up any supported hardware that is installed in your system. To do this, select the hardware type you have currently installed in your system. Make sure the base I/O address, base memory address (if applicable), and other configuration parameters are correct. See Signalogic DSP Software Users Guide section 8.2.2, DSP/Analog Hardware Configuration, for more information about configuring DSP/analog hardware. See also the appropriate hardware section in chapter 3 of the Hypersignal-Macro Series Hardware Reference Guide, for more information about specific hardware types.

NOTE: If you will be using DSP/analog hardware which requires a memory base address (i.e. memory base address not listed as 'none' in the Hardware Selector), then your system almost certainly will require the hardware's memory-mapped area to be "reserved" using the EMM386.EXE line in the system's CONFIG.SYS file. This is necessary to avoid conflicts with memory-resident software programs and utilities, as well as other installed hardware. For more information about this, see section 1.4.4, System Drivers and Resident Program Considerations, and EMM386.EXE Considerations (Reserving Memory Areas) in section 4.3.2, Memory-Mapped Transfer Gotchas.

Next, click on the "Set Hardware Variables" button, which will display a secondary, pop-up dialog box. Double-click on appropriate hardware variables on the lefthand side. ***If you only have one board installed in your system, then it's best to set all hardware variables to that board using "Set All".*** Note, however, that multitasking allowed by DSPower-Block Diagram allows more than one board to run and results to be displayed at the same time by setting up different hardware variables. See Signalogic DSP Software Users Guide section 8.2.2, DSP/Analog Hardware Configuration, for more information about configuring DSP/analog hardware using the Hardware Selector dialog box.

Related Installation Topics

Installing Hypersignal-Macro Series Software

Installing DSPower Series Software

Configuration and Checkout of DSPower-HWLib Software

Configuration and Checkout of DSPower-Block Diagram Software

Installing and Configuring Hypersignal Software For User Mode Operation

3.2.5 Installing and Configuring Hypersignal Software For User Mode Operation

Installing and Configuring Hypersignal software is covered in full detail in Hypersignal-Macro Series Users Manual chapter 2, Getting Started, so this section and related topics are provided as a Windows online Help file version.

If you are installing a Hypersignal-Macro Series software package at the same time as a DSPower series package, then the Signalogic Software Setup utility will allow you to install both packages at once. And, if the Hypersignal package is being used as a DSP Engine by a DSPower series package, configuration of Hypersignal is handled automatically and transparently, which means you can probably ignore this section and related topics.

All Hypersignal-Macro series software packages can be operated in user mode or engine mode. This section deals exclusively with installing and configuring a Hypersignal-Macro series package for operation in user mode. For more information, see User Mode and Engine Mode in section 1.1, Relationship of Signalogic DSP Software Components.

NOTE: Some of the sections listed below are essentially reprinted from Hypersignal-Macro Series Users Manual sections 2.1 through 2.5.3. Some sections may have material that is copyright © 1985-1990, by Hyperception, Inc. in addition to Signalogic's copyright © 1991-1995. All rights are reserved by their respective copyright holders.

Related Hypersignal Installation Topics

General Installation Topics

Installing Hypersignal-Macro Series Software

Installing DSPower Series Software

Configuration and Checkout of DSPower-HWLib Software

Configuration and Checkout of DSPower-Block Diagram Software

Installing and Configuring Hypersignal Software For User Mode Operation

Installing Hypersignal Without the Software Setup Utility

Below is the basic sequence for stand-alone installation of Hypersignal-Macro series software packages:

1. Copy *.* from distribution diskettes #1 and #2 to a hard disk subdirectory named "X:\hsmacro", "X:\hsacous", "X:\hsmacnrt", or similar, depending on the Hypersignal package that you have ("X" is an appropriate disk drive identifier, "C", "D", etc.)
2. Copy *.* from distribution diskette #3 to a hard disk subdirectory "X:\hsmacro\waveform", "X:\hsacous\waveform", "X:hsmacnrt\waveform", etc.
3. Run Hypersignal using appropriate HSx.BAT file. See Running Hypersignal in User Mode from DOS.

NOTE: When installing Hypersignal software without the Software Setup Utility (i.e. using DOS command-line), the HSxxxxx.OV_ file (where "xxxxx"is macro, acous, macnrt, etc. depending on the Hypersignal version) file must be expanded, using the EXPAND.EXE utility, which is included with DOS version 5.0 and higher. When Hypersignal is run for the first time, after being installed as indicated above, the HSx.BAT files will do this for you automatically. The appropriate HSx.BAT file attempts to locate expand.exe from your system PATH list and on your \DOS and

\WINDOWS subdirectories. ***See Running Hypersignal in User Mode from DOS for more information.***

Running Hypersignal In User Mode from DOS

You can run Hypersignal-Macro series software in user mode by invoking the appropriate batch file provided with the software. These batch files first install the Metagraphics "MetaWindow" graphics driver (makes it memory-resident), runs Hypersignal, and then remove the graphics driver from memory when you exit Hypersignal. This keeps the graphics driver out of system memory when you are not using Hypersignal.

NOTE: When a Hypersignal package is run transparently by DSPower-Block Diagram or DSPower-HWLib software as a DSP Engine, the MetaWindow graphics driver is not loaded or used in any way.

To run the appropriate Hypersignal-Macro series batch file, first select as the default (logged) subdirectory the "c:\hsmacro", "c:\hsacous", or or whatever name was used when installing the software (see section 3.2.5 above, Installing and Configuring Hypersignal for User Mode Operation) and run one of the following batch files: Below is a list of the correct batch files to use:

Table 1 Batch Files to Run Hypersignal in User Mode

Hypersignal Package	Batch Filename
Hypersignal-Macro NRT	hs.bat
Hypersignal-Macro or Hypersignal-Macro EX	hsm.bat
Hypersignal-Acoustic	hsa.bat
Hypersignal-Macro NRT, Nihon Version	hsn.bat
Hypersignal-Macro or Hypersignal-Macro EX, Nihon Version	hsmn.bat
Hypersignal-Acoustic, Nihon Version	hsan.bat

To run one of the above batch files, enter its filename at the DOS command-line prompt, without the ".bat" extension, and push the 'Enter' key.

NOTE: When you run a Hypersignal-Macro series package in user mode for the first time, you will see a message of the form "HSxxxxx.CNF file not found -- initializing new configuration...". All this means is that you must set up driver selections and other basic information for the first time before the software is fully operational. Then, when you "exit" Hypersignal, all selections and configuration will be saved. When you next run the software, driver selection and other setup will not be required.
See Configuring Hypersignal in User Mode, below, for steps to follow when configuring a Hypersignal-Macro series package for the first time.

You can also invoke Hypersignal from a remote path. Generally, Hypersignal software searches for support files, its internal online Help file, and printer-driver definition file first on its own path, then on the currently logged DOS path, and then in the DOS path list. The online Help and printer-driver definition files are also searched for on the path specified in the User Setup area (see below).

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

User Setup Area Initialization in Hypersignal User Mode

DSP/Analog Hardware Configuration in Hypersignal User Mode

External Program Configuration in Hypersignal User Mode

Running Hypersignal In User Mode from Windows

[@j DOS box, Hypersignal icon files, hs.ico, hsm.ico, hsa.ico]

If Windows 3.1x or higher is installed on your system, you can conveniently run Hypersignal-Macro series software packages from Windows by installing the Hypersignal icon (.ico) file included on distribution diskette #1. To do this, perform the following steps from Windows Program Manager:

1. Select Program Manager | File | New and select *program item.*

2. For **Description**, enter "Hypersignal-Macro" (or Hypersignal-Macro EX, Hypersignal-Acoustic, etc.); for **Command Line**, enter the path where the software is installed plus the appropriate batch filename as listed above in Running Hypersignal in User Mode from DOS (example: "c:\hsmacro\hsm.bat");, and for **Working Directory**, enter the installation path (same as Command Line but without batch filename). *Helpful hint: entering a space after the dash, as with "Hypersignal- Macro", may make the icon descriptor extend less to the sides, creating a "well-behaved program item" that doesn't bump up against it neighbors.*

3. Select the "Change Icon" button, and enter the installation path plus icon filename in the **Filename** box (example: "c:\hsacous\hsa.ico"). Icon filenames are hs.ico for Hypersignal-Macro NRT, hsm.ico for Hypersignal-Macro and Hypersignal-Macro EX, and hsa.ico for Hypersignal-Acoustic.

4. Upon return to Program Manager, you should see the new Hypersignal icon. After double-clicking, Hypersignal should run full-screen, with brisk performance, and all waveform displays and other graphics displays should be full-screen and fast. If this isn't the case, see section 4.1, Troubleshooting Installation Problems.

Use of the batch filename (hs.bat, hsm.bat, hsa.bat, etc.) as the command line program name is very important, because this automatically causes the correct .pif file to be loaded (hs.pif, hsm.pif, hsa.pif, etc.). These .pif files have been tailored to provide optimum performance for Hypersignal-Macro series software packages when run under Windows. See section 1.4.2, Performance Considerations, for more information about Hypersignal .pif files.

NOTE: If Hypersignal software is installed with the Software Installation Utility, a Windows program which is shipped standard with DSPower series software, icon and .pif file setup is performed automatically.

If Hypersignal is executed in user mode from Windows, either from an installed icon or from a DOS prompt started from Windows, then it will be running in a "DOS box", which simulates a stand-alone DOS environment (also called real-mode). Actually, however, the host machine is in protected-mode, which is only possible with 386, 486 or higher processors. In protected mode under Windows, "time-slices" are still being given to Windows, even though it is in the background (not visible). Thus, the potential exists for Hypersignal software, and all its functions, displays, and hardware-based instrumentation, to run slower than in real-mode. See Hypersignal Performance Considerations, under section 1.4.2, Performance Considerations, for more information about operating Hypersignal in protected-mode.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

User Setup Area Initialization in Hypersignal User Mode

DSP/Analog Hardware Configuration in Hypersignal User Mode

External Program Configuration in Hypersignal User Mode

Configuring Hypersignal in User Mode

When you run a Hypersignal-Macro series package in user mode for the first time, either from DOS or from Windows, you will see a message of the form "HSxxxxx.CNF file not found -- initializing new configuration...". This only means you must make some initial driver and setup selections before the software is fully operational. Then, when you "exit" Hypersignal, all selections and configuration will be saved. When you next run the software, driver selection and other setup will not be required.

When running a Hypersignal-Macro series package in user mode for the first time (or in the event that the HSxxxxx.CNF file should be deleted), perform the following configuration steps:

1. Select a graphics driver (see Graphics Driver Selection in Hypersignal User Mode, for full discussion). Generally, using the "best-guess probe" value provided by the software will produce reasonable results--better resolution may be possible if you know exactly what kind of video board is in your system.

NOTE: When running a Hypersignal-Macro series software package under Windows, you may encounter problems with the currently installed Windows display driver in transition between Windows and Hypersignal full-screen display. See section 4.2, Troubleshooting Video and Display Problems, for more information.

2. Select a mouse driver (see Mouse Driver Selection in Hypersignal User Mode, for full discussion). Using the "best-guess probe" value provided by the Hypersignal software may or may not produce reasonable results. The probe accurately detects the presence of a memory-resident MOUSE.COM driver and some mice connected directly to the COM1 port, but has trouble with other mice and with COM2 port connections. Best results are almost always obtained if you have a Microsoft-compatible mouse connected to the COM1 or COM2 ports, and you enter '4C1', or '4C2', respectively.

NOTE: The following steps assume that you know how to make basic Hypersignal menu selections and enter data into Hypersignal menu fields. If not, please take a quick look at Hypersignal-Macro Series Users Manual section 3.1, Keyboard and Mouse Interface.

3. Set the subdirectory field in the User Setup menu selection to "hsmacro\waveform" or "hsacous\waveform" (or whatever name you used for distribution diskette #3 files when installing the software).

4. If you have a real-time version of software (anything other than Hypersignal-Macro NRT), select the System Configuration menu item and enter the designator for your DSP/acquisition hardware (see DSP/Analog Hardware Configuration and Setup in Hypersignal User Mode, below, for full discussion) in the first four fields. The Hypersignal online Help for this menu item contains a full list of hardware designators. Selecting DSP/acquisition hardware is only necessary to run those Hypersignal functions requiring external analog input. Functions that can use the DSP as an accelerator will still operate using the 80x86 and/or 80x87 until a DSP board has been selected.

5. For both real-time and non-real-time software, enter the DEVELOPMENT DSP field in the System Configuration menu selection (last field, at the bottom of the menu). See the Hypersignal online Help for valid entries for this field. This field controls subsequent code generation and file acquisition from DSP manufacturer development tool output files. Entering this field is not required for the software to run--in fact, leaving it as a 'NONE' entry may be useful for DSP chip-independent experimentation as you design your DSP algorithms.

6. At this point, you have completed basic Hypersignal user mode configuration. You can now run Hypersignal functions by entering filename fields with the example waveform filenames included on the distribution diskettes--example filenames include upchirp, speech, elliptic, and signal.

7. See Hypersignal Performance Considerations, under section 1.4.2, Performance Considerations, for information and suggestions concerning optimizing Hypersignal operation.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode
Graphics Driver Troubleshooting in Hypersignal User Mode
Mouse Driver Selection in Hypersignal User Mode
Mouse Driver Troubleshooting in Hypersignal User Mode
Configuration and Setup in Hypersignal User Mode
User Setup Area Initialization in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

Math Coprocessor Usage in Hypersignal

Regardless of whether operating in user mode or engine mode, all Hypersignal-Macro series software performs automatic detection and utilization of 80x87 series math coprocessors, if present in the host PC system. If a math coprocessor is present in your system, then the software should detect exactly which one (separate 8087, 80287, 80387 or onchip 80487 or higher), and prepare for use of the math coprocessor where appropriate in Hypersignal. If a math coprocessor is not present in your system, then all functions that require floating-point operations (such as Filter Construction, Difference Equations, and many others) are still performed with the same precision, but much slower (about 4 to 6 times slower). The decrease in speed occurs because software routines are used that exactly emulate the 80x87 math coprocessor. These software routines are much slower, because many 80x86 instructions are required to do what the 80x87 normally does in one.

If, because your system's 80x87 chip is faulty or for some other reason, you wish to override the automatic 80x87 detection then type at the DOS command-line (before executing Hypersignal):

`SET 87=N <Enter>`	(sets the DOS environment variable "87" to OFF; forces the software to use 80x87 software emulation)
`SET 87=Y <Enter>`	(sets the DOS environment variable "87" to ON; forces the software to use 80x87 hardware)

If you wish to re-activate automatic detection of the math coprocessor by the Hypersignal software, then type at the DOS command line (before executing Hypersignal):

```
SET 87=    <Enter>
```
(undefines the environment variable; returns software to automatic detection)

Most Hypersignal operations that require a high-degree of numerical precision use 8-byte precision. However, arbitrary filter design and some Difference Equation functions use 10-byte precision (also emulated exactly through software if an 80x87 is not present).

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

User Setup Area Initialization in Hypersignal User Mode

DSP/Analog Hardware Configuration in Hypersignal User Mode

External Program Configuration in Hypersignal User Mode

Graphics and Mouse Driver Selection in Hypersignal User Mode

NOTE: This section only applies if a Hypersignal-Macro series software package is being operated in user mode. This section does not apply if the Hypersignal software is being operated in engine mode, as is possible with DSPower-Block Diagram. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

Upon executing Hypersignal-Macro series software for the first time, or selecting Graphics/Mouse Config from the main menu, two separate lists will be presented to you: first, a list of graphics drivers, and then a list of mouse drivers. If you have selected Graphics/Mouse Config from the main menu, then you can use the 'Esc' key to exit at any time, but if you are executing the software for the first time, you *must* choose graphics and mouse drivers before the software will allow you do anything else.

When you next "exit" the software ('E' key from the main menu), the current driver selections are saved in the Hypersignal environment configuration save file, and no further graphics or mouse driver selection is required unless you choose the Graphics/Mouse Config selection from the main menu or receive a new version of software.

Hypersignal uses the Metagraphics "MetaWindow" memory-resident driver to provide direct support for over 100 different types of graphics hardware and 6 different types of mouse hardware. Supported graphics hardware includes CGA, EGA, VGA, PS/2, Hercules, AT&T, various portables, Wyse, and several popular 800x600 and 1024x768 formats. Supported mouse hardware includes Microsoft, Logitech, Mouse Systems, and others. Also supported directly is the NEC PC98xx series of machines and compatibles, which are widely used in Japan (the Nihon versions of Hypersignal-Macro, Hypersignal-Macro NRT, and Hypersignal-Acoustic are designed specifically to run on these machines). MetaWindow is manufactured by the Metagraphics Software Corporation--see the copyright notice at the beginning of the Hypersignal-Macro Series Users Manual.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode
User Setup Area Initialization in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

NOTE: This section only applies if a Hypersignal-Macro series software package is being operated in user mode. This section does not apply if the Hypersignal software is being operated in engine mode, as is possible with DSPower-Block Diagram. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

Hypersignal-Macro series software always performs a "probe" into your system hardware and returns a "best-guess" suggestion as to what graphics driver choice should work. This probe is intended to serve only as a guide, and need not be followed in all cases. For example, if you had an 800x600 (SuperVGA) or 1024x768 resolution board in your system, the probe might return selection 42, which indicates standard 640x480 VGA hardware. Of course, this selection would work fine, but you could get better resolution by choosing the appropriate 800x600 or 1024x768 selection, depending on the manufacturer and model of the particular video board in your system.

NOTE: If you specify a color graphics driver (CGA, EGA, VGA, etc.) to be used with a monochromatic monitor, then add an "M" suffix to your selection; e.g. enter '42M' or '42m' for a VGA-compatible video card connected to a black and white monitor. Some monochromatic monitors, such as Compaq, will have excellent response to color displays, while others will not. The "M" suffix affects only menus, Hypersignal online Help, and other text displays, reducing the number of "color", or gray-level, values used in these displays.

If you have selected Graphics/Mouse Config from the main menu and end up making no change in the current graphics driver selection (a blank entry will use the current selection, which is displayed along with the "probe best-guess" at the top of the display), then all waveform display settings will remain unchanged. However, after

running Hypersignal for the first time, or after specifying a different graphics driver selection, all waveform display settings will be initialized to a default state. Altering only the monochromatic "M" parameter will not affect current waveform display settings.

NOTE: Don't forget the 'PgUp' and 'PgDn' keys! Over 100 different types of graphics driver selections are available. These are displayed in alphabetical order on 4 (four) different screen pages. If you don't see a certain driver selection at first, use the PgUp and PgDn keys to view all possible selections.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

User Setup Area Initialization in Hypersignal User Mode

DSP/Analog Hardware Configuration in Hypersignal User Mode

External Program Configuration in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

NOTE: This section only applies if a Hypersignal-Macro series software package is being operated in user mode. This section does not apply if the Hypersignal software is being operated in engine mode, as is possible with DSPower-Block Diagram. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

If no graphics hardware is present in your machine, Hypersignal-Macro series software will display a message indicating that no hardware whatever could be found, and you will be unable to specify a driver selection. Basically, this condition will deactivate all waveform and instrumentation displays in the Hypersignal software. If you feel that this message is being displayed for your system incorrectly, then contact your software distributor immediately--there may be some sort of hardware or BIOS conflict that can be resolved.

If your graphics driver selection is not producing desired results, or you are unsure of just what type of video hardware is in your system, then the following discussion may help. As you may be aware, many types of graphics hardware will support more than one type of driver listed. Also, some hardware may be available with varying amounts of memory. If displays appear to use only half the screen, or the display "wraps-around", try a driver selection for the same type of hardware, but with less vertical resolution. You may have to experiment to determine the choice that works best. If you are still unsure, try the following guesses--they represent some of the most commonly used types of hardware:

Table 2 Common Hypersignal-Macro Series Graphics Driver Selections

Host PC Type	Typical Graphics Driver Selection
PC/XT compatibles	34 (CGA color), 32 (Hercules mono)
AT compatibles other 286 machines	37 (EGA color)
386, 486, and Pentium machines	42 (VGA color), 65 (800x600 "autoswitch"), 76 (800x600 STB), 95 (800x600 VESA or 8514)
PS/2 compatibles	48 (VGA color), 46 (MCGA mono)

Some driver selections listed are for video hardware that use the "secondary display adapter" address as their default base address. Generally, such video hardware has some distinguishing characteristic about it that implies that it may be used in a system as the second video display, in addition to a standard CGA, EGA, or VGA color display. Extremely high resolution (i.e. greater than 1200x1200) and monochromatic (black & white) operation are two common types of such hardware. When one of these boards is used in a system, it is easy to choose a driver selection that causes the wrong display base

address to be used. Symptoms of a driver choice that assumes an incorrect base address include displays not being restored after striking the 'Esc' key, and unwanted text or strange "graphics" characters appearing in waveform display modes. If you are unable to get the software working correctly with non-standard graphics hardware that is listed as a driver selection, please contact your distributor, as problems of this nature can usually be resolved.

Some "compatible" machines do not always react to all combinations of text, graphics, and color as they should. For example, plasma or some LCD display machines must convert all color combinations to on, off, and possibly an intermediate shade. Usually they do this by maximizing contrast--black on white and white on black are translated equally well. However, sometimes the scheme used by the manufacturers does not always work flawlessly, especially in the case of colors that are not necessarily "dark" or "light". Try entering the 'M' monochromatic suffix if problems of this type should occur.

NOTE: Graphics driver selections for video hardware with 640x480 resolution or less typically require the use of one of the graphics font files provided on the Hypersignal distribution diskettes. These files have ".FNT" filename extensions. If no text is displayed in waveform displays or you think the font used is too small or too large, make sure that all .FNT files present on the original distribution floppy diskettes are in your working Hypersignal subdirectory. Graphics hardware with resolution greater than 640x480 generally use "bitmapped vector-generation" text, which requires no graphics font files.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode
User Setup Area Initialization in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

NOTE: This section only applies if a Hypersignal-Macro series software package is being operated in user mode. This section does not apply if the Hypersignal software is being operated in engine mode, as is possible with DSPower-Block Diagram. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

Hypersignal-Macro series software always performs a "probe" into your system hardware and returns a "best-guess" suggestion as to what mouse driver choice should work. Even more so than the graphics driver, this probe is intended to serve only as a guide, and need not be followed in all cases. For example, the probe accurately detects the presence of a memory-resident MOUSE.COM driver and some mice connected directly to the COM1 port, but has trouble with other mice and with COM2 port connections. Best results are usually obtained by entering '4C1' or '4C2', which assumes a Microsoft-compatible mouse connected to either the COM1 or COM2 ports.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS
Running Hypersignal In User Mode from Windows
Configuring Hypersignal in User Mode
Math Coprocessor Usage in Hypersignal
Graphics and Mouse Driver Selection in Hypersignal User Mode
Graphics Driver Selection in Hypersignal User Mode
Graphics Driver Troubleshooting in Hypersignal User Mode
Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode
User Setup Area Initialization in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

NOTE: This section only applies if a Hypersignal-Macro series software package is being operated in user mode. This section does not apply if the Hypersignal software is being operated in engine mode, as is possible with DSPower-Block Diagram. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

When using Hypersignal-Macro series software, after installing the MOUSE.COM driver, you will probably not be able to go back to operating the mouse directly through the COM1 or COM2 ports without first turning your machine all the way off (not just resetting or rebooting). This is a known problem with the Metagraphics driver, and has to do with the way the COM1 and COM2 serial ports are initialized.

When you move the mouse very rapidly, if menu selection or target window display seems to "wrap around" or actually go in the opposite direction, there are two suggestions:

1. Use the '4C1' or '4C2' selections in the Hypersignal Graphics/Mouse Config menu.

2. If you are using selection '5', which instructs Hypersignal to use the installed mouse.com driver, you may be able to mitigate this effect by adjusting "speed" parameters for the driver. Most mouse.com drivers allow you to control the maximum rate of interrupts to application software using parameters on the "mouse" command line (usually found in the system's autoexec.bat file); lowering the rate of interrupts may help with any rapid mouse movement problem.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS
Running Hypersignal In User Mode from Windows
Configuring Hypersignal in User Mode
Math Coprocessor Usage in Hypersignal
Graphics and Mouse Driver Selection in Hypersignal User Mode
Graphics Driver Selection in Hypersignal User Mode
Graphics Driver Troubleshooting in Hypersignal User Mode
Mouse Driver Selection in Hypersignal User Mode
Configuration and Setup in Hypersignal User Mode
User Setup Area Initialization in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

NOTE: This section is valid whether Hypersignal software is being operated in user mode or engine mode. Note, however, that in engine mode, entries can be made only from macro language programs or external applications. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

This section assumes that a Hypersignal-Macro series software package is already up and running, and you know how to choose menu items and enter data in menu fields using the data-entry editor. If not, please skim Hypersignal-Macro Series Users Manual section 3.3, The Hypersignal Main Menu, or Main Menu in Hypersignal, and section 3.4, Using the Data-Entry Editor, or Data-Entry Editor in Hypersignal, before continuing.

Basic software setup consists of making some initial selections in the Utilities main menu column. See the sections listed below for specific areas of configuration and setup:

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS
Running Hypersignal In User Mode from Windows
Configuring Hypersignal in User Mode
Math Coprocessor Usage in Hypersignal
Graphics and Mouse Driver Selection in Hypersignal User Mode
Graphics Driver Selection in Hypersignal User Mode
Graphics Driver Troubleshooting in Hypersignal User Mode
Mouse Driver Selection in Hypersignal User Mode
Mouse Driver Troubleshooting in Hypersignal User Mode
User Setup Area Initialization in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

User Setup Area Initialization in Hypersignal User Mode

NOTE: This section is valid whether Hypersignal software is being operated in user mode or engine mode. Note, however, that in engine mode, entries can be made only from macro language programs or external applications. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

Select the User Setup menu item. The drive field should already be set for you. The subdirectory field will be set to whatever was current when you first ran Hypersignal--you will want to change this to be your "hsmacro\waveform", "hsacous\waveform", etc. subdirectory. The TIME FILENAME and FREQ FILENAME fields don't really matter, since you can enter these filenames in all functions anyway. If you don't like programs beeping and buzzing at you when you do something they don't like, then set the SOUND to 'OFF'. Everything else should be left at the default. Pressing the 'Esc' key or pressing the 'Enter' key (or pushing any mouse button) while the cursor is on the last field will leave this function.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS
Running Hypersignal In User Mode from Windows
Configuring Hypersignal in User Mode
Math Coprocessor Usage in Hypersignal
Graphics and Mouse Driver Selection in Hypersignal User Mode
Graphics Driver Selection in Hypersignal User Mode
Graphics Driver Troubleshooting in Hypersignal User Mode
Mouse Driver Selection in Hypersignal User Mode
Mouse Driver Troubleshooting in Hypersignal User Mode
Configuration and Setup in Hypersignal User Mode
DSP/Analog Hardware Configuration in Hypersignal User Mode
External Program Configuration in Hypersignal User Mode

DSP/Analog Hardware Configuration in Hypersignal User Mode

NOTE: This section is valid whether Hypersignal software is being operated in user mode or engine mode. Note, however, that in engine mode, entries can be made only from macro language programs or external applications. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

Selecting DSP/Acquisition Board Drivers

Select the System Configuration menu item. If you have a real-time version of Hypersignal (any Hypersignal package besides Hypersignal-Macro NRT), then you should enter in the first four fields a designator for supported DSP/analog hardware. See the Hypersignal online Help for a list of designators for different manufacturers and board types.

NOTE: Typically, the first four fields of the System Configuration menu will be entered the same. There are only two cases where you would not have the first four fields all the same: you have two or more supported boards in the system, or you purposefully want to disable the DSP ACCELERATOR, in which case a selection of 'none' will cause the 80x86/80x87 to be used instead. A situation for

the latter might be analog hardware that has no DSP chip, in which case either 'none' or some other DSP board selection would have to be entered for DSP ACCELERATOR.

ANALOG CONVERSION field

For real-time software versions only, this field selects the DSP/acquisition hardware used by the Analog Conversion menu selection. See the Hypersignal online Help for a complete list of possible "hardware designators" that can be entered in this field. Default entry is 'NONE', which will cause access to the Analog Conversion function from the main menu to be denied.

For hardware with only A/D capability, D/A output will default to the DSP ACCELERATOR field entry (see below).

See the Hypersignal-Macro Series Hardware Reference Guide for a detailed discussion of individual boards, as well as hardware considerations such as method and maximum rate of data transfer, anti-aliasing, multichannel operation, and programmable hardware features.

DSP ACCELERATOR field

For real-time software versions only, this field selects the DSP hardware that will be used to accelerate DSP functions. See the Hypersignal online Help for a complete list of possible "hardware designators" that can be entered in this field.

Note that a few of the hardware designators listed in the Hypersignal online Help may not be valid, if they refer to "pure acquisition" hardware that has no onboard DSP device. Default entry is 'NONE', which will cause the host 80x86 processor and 80x87 coprocessor (if present) to be used instead.

During normal processing, a 'NONE' entry is perfectly valid, essentially deactivating the DSP accelerator, reducing processing to 80x86 and 80x87 speed levels, and making available the standard precision choices. In fact, when using fixed-point DSP hardware, the 'NONE' selection may be preferred for some types of FFT operations, such as filter impulse responses, where time required to process the input waveform is not a factor and high precision is needed.

NOTE: If you are using an analog-only board with no DSP chip, or no D/A playback capability, then whatever board you enter in the DSP ACCELERATOR field will assume those responsibilities. For

example, if you are using an analog-only board for your SPECTRUM ANALYZER selection, then you must have a valid DSP ACCELERATOR selection working in order to run the spectrum analyzer, since the real-time Fourier analysis can't be done on your analog input board.

DIGITAL OSCILLOSCOPE field

For real-time software versions only, this field selects the DSP/acquisition hardware used by the Digital Oscilloscope function. See the Hypersignal online Help for a complete list of possible "hardware designators" that can be entered in this field. Default entry is 'NONE', which will allow only waveform files as input (no analog input).

The DSP/acquisition hardware chosen must have multichannel capability in order to see a true dual-channel display, although different *dual-trace* display formats are possible from one analog input channel. See the Hypersignal-Macro Series Hardware Reference Guide for a detailed discussion of individual boards, as well as general discussion of various hardware considerations, such as sampling rates, triggering, real-time filtering, and DSP source code modification.

SPECTRUM ANALYZER field

For real-time software versions only, this field selects the DSP/acquisition hardware used by the Spectrum Analyzer function. See the Hypersignal online Help for a complete list of possible "hardware designators" that can be entered in this field. Default entry is 'NONE', which will allow only waveform files as input (no analog input).

The DSP/acquisition hardware chosen must have multichannel capability in order to see a true dual-channel display, although different *dual-trace* display formats are possible from one analog input channel. Intrachannel display options include simultaneous magnitude, phase, time, power spectra, and filtered vs. unfiltered. See the Hypersignal-Macro Series Hardware Reference Guide for a detailed discussion of individual boards, as well as general discussion of various hardware considerations, such as sampling rates, triggering, real-time filtering, and DSP source code modification.

DSP Clock and External Sampling Clock Entry

After the four DSP/analog hardware function fields, an entry of the form '-NN' is possible to specify DSP clock rate. If such entry is made,

NN should be a value in MHz, and is intended for DSP/acquisition boards that:

1. base their analog sampling rate on the main DSP clock, typically using an integer division, or submultiple method

2. are available in more than one clock rate version

For example, some TMS320C25-based hardware come in more than one version, with different DSP clock speeds; typical values might be 28, 40, or 50 MHz. Thus, you might enter 'XXXXX-40', where "XXXXX" is the hardware designator, to specify a 40 MHz version. If no clock rate entry is specified, the software will assume a default rate indicated in the "Performance Specifications" section of the hardware's entry in the Hypersignal-Macro Series Hardware Reference Guide. In most cases, the default is correct, since there are still relatively few boards that come in different speeds. For this reason, no entry (default) is highly recommended unless you are absolutely sure of the DSP clock rate.

Also, an '-EXT' external clock "attribute" can be entered after any hardware designator in the above four fields, *where in this case "clock" is referring to the analog sampling rate clock, and not the DSP clock.* External clock entry deactivates any assumed sampling rate programming for the entered hardware, allows menu entry anywhere from 0 (dc) to 1 GHz in the Analog Conversion, Digital Oscilloscope, Spectrum Analyzer, and D/A playback-from-display functions, and passes a 16-bit or 32-bit integer value equal to the menu entry directly to the DSP source code. Do not attach this attribute for boards that do not truly have some sort of external clock input--otherwise they will "freeze up". Use this entry only if you are sure that the hardware's analog sampling circuitry is operating from an external clock. External clock entry can be made additionally to '-NN' entry described above.

MEMORY BASE ADDRESS and I/O BASE ADDRESS fields

These two fields, MEMORY BASE ADDRESS and I/O BASE ADDRESS, are somewhat more complicated. Normally, you will want to leave these two fields at their default (default values are listed in the Hypersignal online Help and in the Hypersignal-Macro Series Hardware Reference Guide). However, there can be times when you need to change base addresses--the best examples being a possible conflict with boards you already have in your system, or a manufacturer that ships different boards with different base addresses.

Note that there is one entry for most manufacturers supported--not for every board. If you need to change a base address, *be sure you only change the value for the relevant manufacturer*--the other values do not need to be correct, but *they must remain entered!* Enter zeros for the other manufacturers if you must--but enter one value for every manufacturer listed in the field label (you can always get the defaults back by deleting the configuration file, if necessary).

If the manufacturer of your DSP/acquisition hardware does not appear on the menu, then you will have to change memory and I/O base addresses directly in the user-environment configuration file. See Hypersignal-Macro Series Users Manual section 3.7, Accessing and Updating the User-Environment Configuration File, or Configuration File in Hypersignal, and also the "config.doc" file, included on Hypersignal distribution diskette #2, for instructions on how to do this.

Multiple Boards From Same Manufacturer

If you have two or more boards in your system from the same manufacturer, then Hypersignal will consider the first board mentioned in the four "operation" fields (ANALOG CONVERSION, DSP ACCELERATOR, DIGITAL OSCILLOSCOPE, and SPECTRUM ANALYZER) to be at the entered I/O base address, the second board to appear in the operation fields to be at the I/O base address plus 10H (16), the third board at the I/O base address plus 20H, and so on. Note that the software has no way of knowing that two boards in the system at the same time unless you have entered both designators at least once in the first four fields of the System Configuration menu. If only one is entered then the software assumes that this board is located at the corresponding base address value, regardless of how you have set the jumpers on the board.

NOTES: All memory and I/O base addresses must be entered in hexadecimal. Please consult the Hypersignal-Macro Series Hardware Reference Guide to see if your DSP/acquisition hardware requires a base address entry other than the default before it will operate. Remember, some manufacturers send out different boards with different base addresses.

All memory and I/O addresses must not conflict when different boards are present in the system at the same time. If you change the base address jumper(s) on a board from the factory configuration, you must also change the appropriate memory or I/O base address field.

The "Exit,Save" function ('E' key) from the main menu will save all entries for use in later sessions.

A few supported hardware manufacturers use a separate, memory-resident driver that requires base address setup to be done outside of Hypersignal (usually via a driver command-line switch or a DOS environment variable). Consult the appropriate section in the Hypersignal-Macro Series Hardware Reference Guide for your hardware to see if this is the case.

80286/80386 INSTRUCTION SET field

This field should generally be set to 'Y' if you have an 80286, 80386, or 80486 machine. Depending on the DSP/acquisition hardware design and data transfer scheme implemented by the hardware manufacturer, this field may or may not be relevant. Only change it to 'N' if you definitely have an 8086 or 8088 (IBM PC/XT machine) or you are specifically instructed to do so in the Hypersignal-Macro Series Hardware Reference Guide, depending on your particular DSP/acquisition hardware.

Symptoms of leaving this field set to a 'Y' when not appropriate for certain DSP/acquisition hardware include "spikes" in your analog input data, or board freeze-ups during real-time operation.

General Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

External Program Configuration in Hypersignal User Mode

NOTE: This section is valid whether Hypersignal software is being operated in user mode or engine mode. Note, however, that in engine mode, entries can be made only from macro language programs or external applications. For more information, see User Mode and Engine Mode, in section 1.1, Relationship of Signalogic DSP Software Components.

Hypersignal-Macro series software can be configured to execute external programs from be selecting customized menu items. For example, you might want to set up a text-editor as a menu item under the Utilities column, so that you can go directly to your editor from Hypersignal to review generated source code, or set up a debugger so that you can see what Hypersignal has downloaded and is executing on your DSP board. To do this, select the Ext Program Config menu item. In the appropriate field for where you want the external program menu label to appear on the Hypersignal main menu, enter the filename of your program, followed by a comma, followed by the menu label as you would like it to appear. For instance, an editor might be set up by entering

```
editor,text-editor
```

in the UTIL FILE, MENU LABEL 1 field. Such an entry would cause Hypersignal to look for an executable file of name "editor.com" first, then "editor.exe", then "editor.bat", in that order, whenever the menu item "TEXT-EDITOR" is selected from the Hypersignal main menu. Of course, you can explicitly enter an extension if not ".COM", ".EXE", or ".BAT". Be sure to specify where the external file is located in the DRIVE and SUBDIRECTORY fields, although Hypersignal will look elsewhere, including the DOS path list, for the file if not found immediately.

It is also possible to execute external programs from Hypersignal macro programs. This technique is used extensively by many of the additional functions included with Hypersignal-Macro EX and Hypersignal-Acoustic. The technique is also used extensively by

DSPower-Block Diagram function files responsible for implementing and controlling Hypersignal blocks from the DSPower-Block Diagram environment.

Related Hypersignal Installation Topics

Running Hypersignal In User Mode from DOS

Running Hypersignal In User Mode from Windows

Configuring Hypersignal in User Mode

Math Coprocessor Usage in Hypersignal

Graphics and Mouse Driver Selection in Hypersignal User Mode

Graphics Driver Selection in Hypersignal User Mode

Graphics Driver Troubleshooting in Hypersignal User Mode

Mouse Driver Selection in Hypersignal User Mode

Mouse Driver Troubleshooting in Hypersignal User Mode

Configuration and Setup in Hypersignal User Mode

User Setup Area Initialization in Hypersignal User Mode

DSP/Analog Hardware Configuration in Hypersignal User Mode

3.3 Release Notes

Normally, the online Help documentation will be the most up-to-date information available for Signalogic DSP Software components, except in cases where features already documented did not make it into the current release of software. ***Be sure to check the *.doc files included with each software component to see if in fact there are features not yet installed or known bugs and/or workarounds in the current version.***

3.3.1 Revision History for Hypersignal-Macro Series Software

[@j release notes, new features, enhancements, bug-fixes, corrections]

Following is revision history of Hypersignal-Macro RT, Hypersignal-Macro EX, Hypersignal-Acoustic, and Hypersignal-Macro NRT software since June 1991. The history is organized in reverse chronological order, with most recent enhancements/corrections listed first.

NOTE: Use the Browse (">>" and "<<") buttons to scroll forward and backwards in the release notes.

Most Recent Release Notes

New Features, Hypersignal-Macro Series, MAR95

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR95

New Features, DSPower-HWLib, MAR95

Bug-Fixes/Corrections, DSPower-HWLib, MAR95

New Features, DSP Source Code Interface, MAR95

Bug-Fixes/Corrections, DSP Source Code Interface, MAR95

New Features, DSPower-Block Diagram, APR95

Bug-Fixes/Corrections, DSPower-Block Diagram, APR95

Release Notes, Hypersignal-Macro Series, MAR95

Release notes for Hypersignal-Macro series software from March 1995 through present cover Hypersignal-Macro RT and Hypersignal-Macro EX v4.00xf, Hypersignal-Acoustic v4.00xf, and Hypersignal-Macro NRT v5.00xf.

New Features, Hypersignal-Macro Series, MAR95

1) Automatic processing of either .WAV or .TIM files by lcorr, lconv, lfft, and wlt functions. .WAV can also be specified in output filenames when using these functions.

2) First version of support for Innovative Integration PC50 support added. See Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for notes.

3) User-defined window functions enabled in FFT Generation, LPC Autocorrelation, and Spectrum Analyzer. If one of the defined window names (e.g. 'hm', 'bt', 'r', etc.) is not entered, then the entry is assumed to be either a .tim or .wav waveform file. NOTE: the window waveform length should be equal to the framesize entered. A suggestion to avoid mismatches, using FFT Generation as an example, would be to write a short macro function "FFT_Ex" or similar. This function would prompt for the same parameters as FFT Generation, and then call Difference Equations (or a user-defined module) to generate the exact window needed, before invoking FFT Generation.

4) 'BAR' entry allowed in Spectrum Analyzer TPL field, in addition to 'LIN' and 'PNT'. 'BAR' is now the default entry in Hypersignal-Acoustic; 1/N octave-band frequency axis display (LOG FREQ field) no longer automatically invokes bar-type display if 'LIN' or 'PNT' entry is made in TPL field.

5) Output attenuation list values added to Analog Conversion function for multichannel boards. Tested initially with Sig32C-8 board. See Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for detailed information.

6) Full multichannel implementation completed for Innovative Integration PC31 board. All eight (8) input channels, including multiplexing, and all four (4) DAC channels, are operational from software menus.

7) Addition of OpenTextFile, ReadTextFile, and CloseTextFile commands to macro language. See Hypersignal-Macro Series software addendum.doc file (distribution diskette #2).

8) Addition of SetWaveformFileMode and SetTextFileMode commands to macro language; 0 is default mode (as before), 1

specifies that file errors should not cause a macro abort. When an error occurs in this mode, file functions (GetHeaderValue, OpenTextFile, etc.) typically return -1.

9) Addition of '==' and '!=' comparisons, and addition of '!' and '~' operators to macro language. Addition of "boolean" type and TRUE and FALSE reserved constants to macro language. See Hypersignal-Macro Series software addendum.doc file (distribution diskette #2).

10) Addition of .WAV file read to real-time filter download functions; these functions now default to first .TIM, and then .WAV binary waveform files when .IIR and .FIR filter coefficient (text) files cannot be located.

11) Fully updated version of Hardware Reference Guide released; March 1995, revision 3.5.

12) Addition of long MLS lengths for DSP5600x boards, including TBS Tahiti and Techron TEF20HI. Previous MLS maximum length was from 4095 to 32767, depending on the DSP5600x hardware type and amount of external memory. New maximum length is 262,143. Hypersignal-Acoustic only. NOTE: MLS lengths 8,191, 16,383, and 65,535 are not yet operational.

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR95

1) Correction to Convolution/Correlation function when specifying .WAV file input in the filter (impulse response) field.

2) Correction to gain list entry for last two channels when using Sig32C-8 board in Analog Conversion function.

3) Documentation of ProPort and MP3210 combination in online Help; correction to sampling rate programming for this combination. Enter 'ARI3210-B' in System Configuration menu.

4) Addition to driver for Innovative Integration to implement software workaround for dual-port memory bug on Rev. F and earlier PC31 boards.

5) Addition to driver for Turtle Beach System Tahiti board to implement consistent setting of digital potentiometer registers upon driver reset. Currently, the setting is the midpoint, which creates

about a 13dB gain when output from the Tahiti is looped back to input.

6) Correction to .WAV format read functions where non-standard .WAV formats were not always handled correctly.

7) Correction to assembly language code generation errors in some DSP5600x IIR filters where rounding was being used, and where illegal instruction sequence was being generated.

8) Correction to Analog Conversion function to allow acquisition of waveform files with long framesize values and extended headers.

Release Notes, Hypersignal-Macro Series, NOV94-FEB95

Release notes for Hypersignal-Macro series software from November 1994 through February 1995 cover Hypersignal-Macro RT and Hypersignal-Macro EX V4.00xe, Hypersignal-Acoustic V4.00xe, and Hypersignal-Macro NRT 5.00xe.

New Features, Hypersignal-Macro Series, NOV94-FEB95

1) An "engine mode" command line parameter has been enabled, similar to driver mode (see below), but allowing Hypersignal to be invoked from DOS or Windows programs without a device driver being installed. As with driver mode, the standard Hypersignal graphics drivers are not loaded (freeing up about 130 kb of low memory), which causes display and instrument functions to be disabled. Also like driver mode, Hypersignal runs "quietly" and produces no screen output of any type. Below are DOS command line and Windows C/C++ program examples to do this:

```
hsmacro /e fname.mac
```

```
hsacous /e fname.mac
```

```
StatusCode = WinExec("C:\\hsignal\\hsmacro.pif
/e fname.mac", SW_HIDE);
```

```
StatusCode = WinExec("C:\\hsacous\\hsacous.pif
/e fname.mac", SW_HIDE);
```

In this mode, Hypersignal interrogates the system for an external device "pipe" driver, and if one is not found (or is not connected to another application), disables interactive communication, graphical output, error/status output, and all macro language non-file input/output. The macro language file specified by fname.mac should contain no display or instrument functions. Also, it should not use the $MANUAL or $WAITFORKEY commands, and it should include an Abort or Exit command to cause termination of the session. Note that the HSxxxx.bat files should not be used from the DOS command line or WinExec routine, or the graphics drivers will be installed unnecessarily.

2) First version of support added for Domain Tech. DSPCard TMS320C31 board.

Enter 'DOMC31' in System Configuration menu. The DSPCard contains a 32 MHz TMS320C31, 32k x 32 or 128k x 32 SRAM, and 14-bit TLC32044 AIC analog I/O channel. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for details on using this board, setting the correct clock rate entry in the System Config menu, and data-entry menu usage.

3) Support added for multiprocessor DSP boards. Enter '/N' after board designator and processor clock (if any), but before DSP download filename (if any), where N is processor number. Default processor number (no entry) is zero. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

4) Addition of SetEscMode and $SETESCMODE commands to macro language. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

5) Addition of "auto-configure" values in Analog Conversion D/A output.

Entering 0 for SAMPLING FREQUENCY and NUMBER OF SAMPLES fields, and null (blank) entry for the CHANNEL LIST field, will cause these values to be set using input waveform file header information. These options are especially useful for macro language operation, where it may not be know in advance which waveform files will be sent to the D/A output.

Bug-Fixes/Corrections, Hypersignal-Macro Series, NOV94-FEB95

1) Correction to long FFT, convolution, and correlation functions when used with previously existing waveforms with extended headers.

2) Correction to D/A playback from 2-D Spectrograph when framesize = FFT size and no overlap was used. In such cases the 2-D Spectrograph function failed to play back the correct amount of waveform designated.

3) Correction to uninitialized variable which could cause the Digital Oscilloscope and Spectrum Analyzer functions to crash if used for first time with waveform files only as input (i.e. no hardware analog input).

4) Correction to Pole-Zero Plot function, which left a filter coefficient file open and could keep other functions from using this file if SHARE.EXE is installed in the host system.

5) Problem with D/A playback for TMS320C25 board from macro language files corrected. Boards that previously failed to respond correctly to a D/A playback call from a macro program included the Ariel DSP-16.

6) Additions to Innovative Integration PC31 Hypersignal driver and TMS320C31 DSP code to prevent output "pops" at the end of D/A operations, and to correct hang-up problems with machines that have external memory conflict with PC31 memory-mapped dual-port SRAM.

7) Correction to Ariel DSP-3210 driver in case where DSP-3210 board has two processors installed.

8) Correction to nested procedure calls inside macro language files.

9) Correction to Analog Conversion D/A looping ('GL' entry) for some lengths of waveform files involving buffer boundary conditions.

10) Correction to Difference Equations output for |equation output| <= 1 for sample lengths longer than 4086. Output was being truncated to +/- 1.

11) Correction to explicit clock entry in hardware designator fields of System Config menu. Previous entry was not using precision beyond 4 significant digits. Current precision is the full length of each entry.

Release Notes, Hypersignal-Macro Series, JUL94-OCT94

Release notes for Hypersignal-Macro series software from July 1994 through October 1994 cover Hypersignal-Macro RT and Hypersignal-Macro EX V4.00xd, Hypersignal-Acoustic V4.00xd, and Hypersignal-Macro NRT 5.00xd.

New Features, Hypersignal-Macro Series, JUL94-OCT94

1) The HSx.bat (hsm.bat, hsa.bat, hs.bat, etc.) file attempts to expand the Hypersignal overlay file and other compressed files when Hypersignal is run for the first time after installation. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

2) First versions of very long FFT, convolution, and correlation are now included with HS-Macro EX. A beta version MLS stimulus & response function is now included with HS-Acoustic. These functions are implemented as protected-mode programs controlled by macro functions (i.e. use lfft, lconv, lcorr, and mls in the Macro Manager menu). The use of extended-DOS .exe programs allows previous Hypersignal memory limitations to be circumvented, and large amounts of memory to be utilized. You should have at least 4 Mbyte of extended memory in your system if you need to use these functions. These functions are included on disk 1 for HS-Macro EX and HS-Acoustic, along with the DOS extender program DOS4GW.exe. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information about these macro functions.

3) A beta-version "equalize" macro function has been added to HS-Acoustic. Combined with the Real-Time Convolver, this function can be used to equalize a transfer function measured in the HS-Acoustic Spectrum Analyzer, using either real-time analog input, or waveform file input. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

4) Hypersignal Magnitude Display, Phase Display, and 3-D Spectrogram have been modified to display long FFT sizes, and to display DFT sizes that are not necessarily a power of 2. Phase Display

for long sizes is limited to wrapped phase only (i.e. unwrapped not enabled). 3-D Spectrogram display for long sizes does not include the "mesh" (cross-hatch) option. There are no limits in Magnitude Display. The 2-D Spectrograph and other frequency domain functions ARE NOT enabled for long FFT and DFT sizes.

5) First version of .WAV file support added. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

6) Full complex arithmetic added to Difference Equations function. Entry of 'j' is treated as sqrt(-1). Complex input waveforms are handled correctly, and complex output is generated if needed. The following functions have been added to support this:

- Re(arg) and Im(arg) Take real and imag parts of complex value. If no other complex values are in the equation, then real-valued output is generated.
- Con(arg) Calculates conjugate of complex value.

Also, standard functions such as exp, sqr, abs, etc. have been modified to accept either real or complex values.

7) The frequency zoom macro function included with HS-Macro EX and HS-Acoustic has been updated. The new function is slower but more accurate. See comments inside fzoom.mac file.

8) The sampling rate conversion macro function has been renamed to fsconv and can also be called from the dsplib.inc library. Use fsconv.mac from the Macro Manager menu.

9) Optional entry of full-scale voltage for individual hardware types is now possible in the System Configuration menu. Entry of '/vv' after a designation is interpreted as vv Volts full-scale. For hardware that has software-selectable gain amplifiers, this value can be used should the input impedance of hardware be changed, so that the INPUT RANGE/GAIN fields in the instrument functions will reference the correct value to make gain setting determinations. For example, a hardware type with default full-scale voltage of 1.4 V is modified so that its full-scale voltage is not 10 V. After entry of 'xxxxx/10' in the System Config menu (where xxxxx is the hardware designator), an entry of 1, v1, or d20 in an instrument INPUT RANGE/GAIN field would cause a gain of 20 dB to be set.

For hardware without hardware-programmable gain, or in cases where the input impedance of the hardware has not been changed, no entry full-scale voltage entry should be made.

10) Re-definition of gray-scale patterns used when plotting 2D contour plots to LaserJet and other B/W printers. Improved gray-scale effect.

11) Addition of 'ARI56-DM' designator in System Configuration menu to allow fully correct operation of the Ariel PC-56D and Digital Microphone combination. Hypersignal-Acoustic only.

12) First version of support for Innovation Integration PC31 TMS320C31 board installed. Use 'IIC31' in System Configuration menu. For processor clock values other than default 40 MHz, enter the clock value also (e.g. 'IIC31-33'). See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for important, additional information.

13) StrCopy, StrVal, and StrLen functions added to macro language. StrCopy example:

```
s1 = StrCopy(s2, 2, 4)
```

causes 4 characters from string s2, starting at position 2, to be copied into string s1. StrVal example:

```
j = StrVal(s1)
```

converts the string s1 into the value j. The returned value is automatically type converted. StrLen example:

```
slen = StrLen(s1)
```

returns the length of the string s1, and stores into slen, which can be real or integer.

14) Macro language include file directive ({INC filename}) modified to search for filename using explicit path information if contained in filename, otherwise try first the path specified in the Macro Manager menu, and then the Hypersignal .exe path.

15) "autoinit" or "auto" option added to macro language menu field inputs for functions and displays. This option does the same thing as "no_change", but can be used to imply that the software is to fill in these fields at run-time, which can make macro files more readable.

16) Circular cross-correlation option added to Convolution/Correlation time domain menu function. Circular correlation proceeds such that

input waveform data repeats when the end of the waveform is reached. Up to filt_len pts. of input waveform data is repeated, where filt_len is the length of the filter being applied.

Bug-Fixes/Corrections, Hypersignal-Macro Series, JUL94-NOV94

1) Correction to inverse FFT function crash that resulted from broken code in release 4.00xc.

2) For Nat. Inst. AT-DSP2200 board: waiting period to remove artifacts due to digital filter settling time after ADC and DAC calibration. First 128 samples are discarded before acquisition / output / measurement / etc. event occurs.

3) Correction to problem where cursor movement before waveform display was finished caused erroneous input (for example, help screen to display). Only occurred with dual-display, and was only a problem in 4.00xc.

4) Correction to waveform editing problem where swapping trace names or moving trace names, without actually changing names, could cause errors between display-and-edit sessions.

5) Correction to D/A output from dual-display of two stereo waveforms.

6) Correction to Ariel DSP-C40 board automatic memory sizing, which failed to determine actual amount of Global SRAM in some cases. Additionally, an entry of ARIC40-B in System Config menu causes data buffers to be located in DSP-C40 Global SRAM memory instead of default DRAM memory.

7) Correction to Recursive Filtering when input waveform file header contains a FRAMESIZE value of zero.

8) Correction to Waveform Editing in Point Mode, with stereo (2-channel) waveforms and SHARE.EXE installed, in which case point mode changes sometimes didn't "stick" or caused the display to be kicked back to the data-entry menu.

9) Correction to comparison of null strings in macro language if-then statements.

10) The frame multiplier in Difference Equations was not lowest-precedence among operators, as it should be. The online Help was updated to reflect this correction. This change is not yet present in the Users Manual, in which section 4.6.1 talks about a correlation example using the frame multiplier. The expression for the pattern waveform in this example should be changed to x2[0,m], and the comments about precedence ignored.

11) Gaussian window choice in FFT Generation was not displayed correctly in frequency domain displays.

12) Frequency zoom fzoom (macro) function corrected to truncate excess, zero-valued length of final output waveform.

13) Correction made to point-mode editing in Waveform Display/Edit function, where initial point-mode edit could result in an invalid output waveform header if a region mode editing operation had not been performed first.

14) Problem corrected in iFFT Generation function, where differences between .REA (real) and .IMA (imaginary) waveform file headers were not being correctly reconciled. Some legitimate differences can occur if the .REA and .IMA files are generated independently, for example using Difference Equations.

15) Access problem that could occur when share.exe is installed, depending on the sequence of functions, has been corrected. Problem occurred when some time domain functions left files open, and other functions tried to open these files, and "access denied" message would appear.

16) Correction to Ariel DSP-C40 driver bug, where setting first value in input lists or first trace to channel 1 did not work.

Release Notes, Hypersignal-Macro Series, MAR94-JUN94

Release notes for Hypersignal-Macro series software from March 1994 through June 1994 cover Hypersignal-Macro RT and Hypersignal-Macro EX v4.00xa - v4.00xc, Hypersignal-Acoustic v4.00xa - v4.00xc, and Hypersignal-Macro NRT v5.00xa - v5.00xc.

New Features, Hypersignal-Macro Series, MAR94-JUN94

1) Selection of trace indicators inside Spectrum Analyzer now update x-axis units and labels. Also, for mixed linear and log frequency x-axis display (during dual-trace operation), separate log and linear grids are used.

2) Impulse response attribute option added to File Acquisition function.

3) First version of support added for Signalogic Sig32C-8 8-channel board.

Enter SIG32C in System Configuration menu. Instrument operation allows any two channels to be selected; continuous disk acquire/generate allows any combination and number up to the maximum eight channels. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for details on using this board and data-entry menu usage.

4) Time domain waveform display function speed increase when only one trace is being displayed.

5) A "string" filename can be entered in the Difference Equations function in place of an equation, causing Hypersignal to read the specified file as ASCII and retrieve an equation. The equation in the file can be up to 255 characters long (the total menu limit in Hypersignal is 80). Also, the equation can contain spaces. The equation should be entered on one line ONLY in the file. The filename should be entered in the Difference Equation equation field as

```
xxxxx.str
```

where xxxxx is the filename. The .str extension is REQUIRED. Any drive and subdirectory information entered in the Difference Equations equation fields will override the default User Setup parameters.

6) /PD:\path\ command line switch added that allows the waveform drive and path information to initialized in the Hypersignal command line, where D is a drive identifier, and path is subdirectory information.

7) New macro language functions:

integer = GetEscape() ; returns 1 if last function was "escaped",

	or aborted, returns 0 if last function was executed
$GETDRVPARMS	; sends message to external device driver asking for updated function/display parameters; used just prior to $RUN or $RUNINTERACTIVE commands
$REFRESH	; causes display to refresh without changing any screen or hardware settings; has an equivalent ctrl-L keyboard interactive command
$DSPREFRESH	; causes DSP board to reset without changing any screen or hardware settings; has an equivalent ctrl-Enter keyboard interactive command
{WRITE filename string}	; causes macro language compiler to create a text file, and write the string data to it (like the {INC directive, no executable code as a result of the "{ }" line itself is produced)

8) Gaussian window option added to FFT Generation function.

9) Minimum phase (minimum delay sequence) calculation macro function added to Hypersignal-Macro EX and Hypersignal-Acoustic distribution diskette #2. For more information on min phase function, see the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2).

10) Signal generation looping has been enhanced to allow easy construction of a continuous function generator. By creating short signal/function waveforms using Difference Equations, and then using these waveforms as input to the Analog Conversion function, a continuous signal generator can be achieved when the ACQ/GEN field is set to 'GL'. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for guidelines on how to perform continuous function generation on one or more channels.

11) Signal acquisition drivers for some DSP boards enhanced to accommodate the possibility of multiple channel operation, including odd numbers of channels. A direct result of work performed for Signalogic Sig32C-8 support (see above).

12) Addition of "constant bandwidth" frame command in Magnitude and Phase Display functions. Using the spacebar to pan forward (or the backspace key to pan backwards) causes the displayed bandwidth to remain the same in the next (or previous) frame. Using the tab key to pan forward (or the Shift-tab key to pan backwards) causes the displayed bandwidth to be incremented (or decremented) within the current frame.

13) Addition of $Y,INTERACTIVE command to $ macro language commands. This command is intended for use with the Analog Conversion function; it answers a prompt with 'Y' (yes) and causes the function to enter interactive mode at the same time. This allows disk record/playback operations to still run to completion as specified in a macro language file, yet remain sensitive to keyboard input during operation.

14) Addition of GetExePath() function to macro language. Assigning the result of this function to a string variable returns the drive and subdirectory (path) from which Hypersignal was executed.

15) Addition of "Save", "Save As..", and "New" commands to the Waveform Display/Edit function. Press the F5 key inside the display to save (update) a waveform currently being edited, press the F6 key to save the waveform as a new filename (and change the display for the current trace to the new waveform), and press the F7 key to create a new wave- form that inherits the attributes of the current waveform, but zeros all sample points. Commands apply to the waveform displayed in the currently selected trace (see '1' and '2' commands).

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR94-JUN94

1) Correction to macro language compilation where string constants (text enclosed by "" marks) that contained macro language keywords ('end', 'procedure', etc.) could be misinterpreted by the compiler.

2) Lowercase characters allow in string constants.

3) Correction to PutDataValue function which incorrectly altered the Maximum Amplitude value in the destination waveform file during some PutDataValue calls.

4) Macro language run-time errors in Users Manual Appendix A should be listed at starting at 100 instead of 70.

5) Problem corrected where repeated DSP/Analog board function usage would eventually result in "....DSP PROGRAM FILE NOT FOUND". Problem caused by temporary file not being closed in all cases.

6) Problem with DSP3210-based stimulus & response corrected (affected Ariel DSP-3210 board and CAC QUANTUMdsp board).

7) Problem with instrumentation real-time filtering applied to second trace in with DSP32C and DSP3210 boards corrected.

8) Correction to problem with 2-D Spectrograph display where very low amplitude waveforms did not display correctly.

9) Correction to File Acquisition problem in macro language mode, where presence of existing output file could cause macro to hang.

10) Correction to external clock problem with Data Translation DT282x series boards.

11) Correction to 10% sampling rate error problem with CAC QUANTUMdsp DSP3210 boards.

12) Addition to Ariel DSP-96 driver so that both "pre-June 1993" memory-mapping PALs and post-June 1993 PALs are recognized, and Hypersignal buffer locations automatically adjusted. Also, a software update was made to allow the 80x86 INSTRUCTION SET to be enabled in faster machines for much better overall performance without a loss in reliability. One negative result of this change: real-time filtering coefficients and delay storage elements for ALL DSP96002 boards had to be relocated into onchip X: and Y: RAM at $40 thru $1EF; otherwise, the higher transfer rates caused a conflict with simultaneous bank DMA accesses in some situations. Moving filter data to internal RAM avoids the problem and allows maximum DMA and host-port throughput. If you need longer filters, disable the 80x86 INSTRUCTION SET field and talk to Signalogic about making a slight modification to the DSP96002 source code (i.e. using the DSP Source Code Interface product for the DSP96002).

13) Correction to TMS320C25 iFFT function, which somehow became broken and was incorrectly calculating maximum amplitude of output data.

14) Increase in TMS320C30 and TMS320C40 maximum FFT size to 4096.

15) Repair to external program execution, which in some cases didn't use explicit path entry in the Ext Prog Config menu selection.

16) Addition of Oak Technology video drivers to Graphics Config menu. These drivers were inadvertently left out, and have been added to the end of this menu. You must use v3.7C of the MetaWindow TSR for these drivers to work. v3.7C corresponds to a June 6, 1991 date on the met_shel.exe file (distribution diskette #2).

17) Addition of "active clear" code for some video boards that do not erase background properly when used under Windows 800x600 and 1024x768 video drivers. Only boards known to have this problem have been affected.

18) Correction to execution of batch files from User-Defined menu items (which are set up in Ext Prog Config menu selection). In some cases, batch files would not execute because command.com was not searched for in the system path. This problem has been corrected.

19) Correction to "incomplete grid lines" plot in Waveform Display/Edit when framesize exceeds 500,000 samples.

20) Correction to problem with waveform acquisition (Analog Conversion function) where waveform file lengths in excess of 4 Msample could fail on first attempt.

21) Correction to D/A playback sampling rate selection problem from Waveform Display/Edit where two display waveforms had different numbers of channels.

22) Correction to uninitialized variable in 3-D Spectrogram display, which infrequently caused log mode (amplitude) operation to display incorrectly.

23) Correction to multichannel file stripping in Analog Conversion input, where the base filename (for interleaved waveform file) was truncated to six characters instead of seven in cases where less than 10 channels were acquired.

24) Correction to dual-channel Waveform Display/Edit display when the second channel display could possibly show an artifact at buffer boundaries (at 8192 points or 16384 points).

25) Correction to time axis in Waveform Display/Edit function when two dual-channels waveforms (4 channels total) are displayed at the same time. The axis was incorrect by a factor of two.

Release Notes, Hypersignal-Macro Series, AUG93-FEB94

Release notes for Hypersignal-Macro series software from August 1993 through February 1994 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40i, Hypersignal-Acoustic v3.40i, and Hypersignal-Macro NRT v4.40i.

New Features, Hypersignal-Macro Series, AUG93-FEB94

1) A new version of compiler has allowed reduced memory usage by HS-Macro and HS-Acoustic. Much more efficient usage of overlays, especially where hardware device drivers are concerned, has been achieved. Up to an additional 50 kb may be available at times for running external user-defined programs. NOTE: Hypersignal currently supports over 55 different types of DSP/Analog hardware. Most, but not all, of these hardware types are currently available for testing at Signalogic. If any DSP/Analog hardware problems should occur with version 3.40i or later, please contact Signalogic at once; we will obtain the necessary version and configuration of hardware to match yours, and get a working version of software to you as soon as possible.

2) First version of Ariel DSP-C40 board (TMS320C40) support installed. Enter 'ARIC40' in System Config menu.

3) New macro language additions and improvements have been installed, including:

<u>New Commands and Operators</u>

$SETRES(xres, yres)	; sets screen dimensions of following waveform display; use before $RUN
$SETOFS(xres, yres)	; sets screen offset of following waveform display; use before $RUN

$SETID(xres, yres)	; sets handle of target window when sending information to Windows application
%	; modulus operator, performs modulus division operands and type conversion rules are the same as integer division operator (div)

General Improvements

- spaces can be included in macro language file parameters; the HS-Macro
- editor will strip them out (for example, string values of " ", or "" can be used to blank a menu field)
- macro language source lines can now be up to 255 characters long
- up to 16 parameters can now be passed to procedures

4) A '/d' "driver mode" flag can be invoked on the command line which will cause HS-Macro to invoke no graphics displays, and make no keyboard inquiries--avoiding user I/O hardware accesses altogether. This flag should be specified only when HS-Macro has been remotely invoked from an external DOS or Windows application (using a device driver to talk to

Hypersignal), and has been instructed to run a macro language file at startup. The macro language file should contain no displays that use the $MANUAL or $WAITFORKEY commands. Below is an example of a WinExec call to do this:

```
StatusCode = WinExec("C:\\HSIGNAL\\HSMACRO.PIF
/d fname.mac", SW_HIDE);
```

A device driver such as pipe.386 (included with DSPower) should be installed in the system prior to using this mode. The HSMACRO.PIF file should be set up as a windowed application, 384 kb required, and background operation; I/O ports and memory need not be monitored. No memory needs to be locked. Be sure that fname.mac includes an Abort or Exit command in order to terminate the process. Also, DO NOT invoke the HSM.BAT file, as this will install the MetaWINDOW graphics driver, which is not needed.

5) An 'EXPORT HEADER (Y/N)' field has been added to the ASCII Export function. Enter a 'N' to cause Hypersignal-Macro waveform

headers to not be included in the exported ASCII file. NOTE: If you desire to re-import a waveform file exported without its header, DO NOT use the ASCII Import function. Instead, use the File Acquisition function and set the SAMPLES/BYTES TO DISCARD field to zero.

Bug-Fixes/Corrections, Hypersignal-Macro Series, AUG93-FEB94

1) Correction to paste-mode Delete function in Waveform Display/Edit, where delete operations could cause bogus waveform data to appear at the end of the waveform.

2) Correction to horizontal axis readout in Waveform Display/Edit function, where the righthand value, when displayed in time units (not sample units), could be the equivalent of one sample too large.

3) Correction to Transfer Function Generation during macro operation, which would crash if the output waveform files already existed.

4) Further correction to Transfer Function Generation where large amplitude results in output could cause crash.

5) Correction to uninitialized variable problem for Intelligent Instrumentation PCI20202C system where modules could be incorrectly identified on carrier board.

6) Correction to string parameter passing in macro language procedures where parentheses and commas were being stripped from string values; e.g. a string such as "sin(2*pi*n)" can now be passed as a procedure value without problem.

7) The macro record mode has been modified to insert a $RUN command after a $PRINT command, which correctly allows a recorded print command to run correctly when "replaying" the macro.

8) Invoking the ANALOG CONVERSION menu with no DSP/Analog hardware selected in macro mode now produces a macro error message and proper abort sequence.

Release Notes, Hypersignal-Macro Series, JUN93-JUL93

Release notes for Hypersignal-Macro series software from June 1993 through July 1993 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40h, Hypersignal-Acoustic v3.40h, and Hypersignal-Macro NRT v4.40h.

New Features, Hypersignal-Macro Series, JUN93-JUL93

1) First version of MTT Instrumentation DSP4200 system (TMS320C30) support installed. Enter 'MTTC30' in System Config menu. Hypersignal-Nihon only.

2) First version of CAC QUANTUMdsp DSP3210 multimedia device driver installed. Enter 'CAC3210' in System Config menu. NOTE: the QUANTUM.EXE file must be run one time beforehand. Placing 'quantum -q' into your autoexec.bat file is a good idea (this program initializes the FPGAs on the QUANTUMdsp board, and is NOT a memory-resident program). The QUANTUM.EXE, VCOS.CFG, and QUANTUM.V4 files must be available (VCOS.CFG and QUANTUM.V4 are used as input by QUANTUM.EXE). These files are installed from the OEM diskette provided by CAC. If there is any problem in locating or using these files, contact Signalogic.

3) First version of Turtle Beach MultiSound DSP56001 device driver installed. Enter 'TBS56' in System Config menu. NOTE1: the TBS56 driver defaults to a "DSP56TBS.OUT" file, instead of the standard "DSP56001.OUT" file used for all other supported DSP5600x boards. NOTE2: The MultiSound board allows only about 12k X 24 X: and 12k X 24 Y: of data memory, which somewhat limits Hypersignal functions such as Spectrum Analyzer, DSP-based convolution, and stimulus & response.

4) First version of National Instruments AT-DSP2200 (DSP32C) device driver installed. Enter 'NAT32C' in System Config menu.

5) "Stimulus flag" installed in Analog Conversion function. Entering ',S' after stimulus filename will cause stimulus not to repeat, regardless of response (record) length. After reaching the end of the

stimulus waveform, zero data is output to the hardware D/A converters. Entering ',R' after stimulus filename will cause stimulus to repeat (as will blank, or default, entry).

6) All Hypersignal programs now require Motorola DSP5600x ".OUT" (COFF format) files instead of ".LOD" files. This brings Hypersignal current with Motorola 5.0 tools.

7) Activation of dual (independent) channel filtering in Analog Conversion function. Enter 'fname1/fname2' in place of 'fname' in CHANNEL LIST field. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

8) Improvements made to PutDataValue function in macro language, including allowing the function to expand an existing waveform file by writing beyond the end of the file. See the Hypersignal-Macro Series software addendum.doc file (distribution diskette #2) for more information.

9) SetFileStripMode(N) and $SETFILESTRIPMODE(N) interactive commands added to macro language. Invoking these commands (for example, invoking $SETFILESTRIPMODE(ON) inside Analog Conversion construct) will cause waveform file-stripping to occur (for multichannel waveform acquisition) if N is set to 'ON' (or '1'). N set to 'OFF' or '0' disables file-stripping (default mode).

Bug-Fixes/Corrections, Hypersignal-Macro Series, JUN93-JUL93

1) Correction to page 2 video problem in instrument display in HS-Nihon.

2) Correction to errant Kanji character problem in HS-Nihon.

3) Correction to Ariel DatPort driver with PC-56D. Both ProPort and DatPort DSP code interrupt service routines were changed to accommodate subtle but significant differences between these two units.

4) Correction to Texas Instruments EVM TMS320C30 device driver.

5) Correction to '<' comparisons in macro language, where a run-time error or bogus results could occur. '>', '<=', '>=' comparisons did not exhibit this problem.

6) Correction to clipping problem past 4096 samples of output in Difference Equations function, which occurred in some cases where input waveforms were involved, and output amplitude differed substantially from input amplitude.

Release Notes, Hypersignal-Macro Series, APR93-MAY93

Release notes for Hypersignal-Macro series software from April 1993 through May 1993 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40g, Hypersignal-Acoustic v3.40g, and Hypersignal-Macro NRT v4.40g.

New Features, Hypersignal-Macro Series, APR93-MAY93

1) Spectrum Analyzer displays horizontal axis in time units for raw analog time input or impulse response display if:

- the only trace active is one of these, and
- two traces are active and bottom trace is one of these

2) For Hypersignal-Acoustic only, the ctrl-U key can be used to cause distance units readout (based on the speed of sound) instead of time units readout in all displays where appropriate.

3) Using 'ctrl-Enter' instead of 'Enter' in the Spectrum Analyzer resets only the DSP, and not current display parameters. This can be useful for trigger reset or averaging reset.

4) Significant improvements to sampling rate conversion macro (SAMCONV.MAC), including using zero-sample insertion to avoid sin(x)/x effects and calculation of LPF transition band and cutoff frequency as a percentage of desired frequency shift.

5) Major speed improvement to all real-time functions using an AT&T DSP3210-based board.

Bug-Fixes/Corrections, Hypersignal-Macro Series, APR93-MAY93

1) A long-lived and troublesome bug in Waveform Display/Edit, where changes made in point mode did not always "take" after a mode switch, escape to edit menu, zoom, or frame translate has been squashed.

2) Correction to cursor amplitude readout in Spectrum Analyzer during transfer function display after engineering units have been set.

3) Correction to horizontal axis readout in Waveform Display/Edit function for time units. One sample less than correct value was being used to display righthand axis value.

4) Correction to memory requirement determination for TMS320C30, DSP32C, DSP3210, and DSP96002 boards for Convolution/Correlation with very long impulse response (greater than 12,000 points). Previously, in some situations, inadequate amounts of memory were not observed.

Release Notes, Hypersignal-Macro Series, MAR93

Release notes for Hypersignal-Macro series software in March 1993 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40f, Hypersignal-Acoustic v3.40f, and Hypersignal-Macro NRT v4.40f.

New Features, Hypersignal-Macro Series, MAR93

1) Updates to Hardware Reference Guide (chapter 4) and Users Manual (chapter 7). Current dates are March 1993. Tutorial and Software Reference Guide are unchanged (current dates are January 1993, and August 1992, respectively).

2) Addition of GetSysConfig, StrPos, and UpCase functions to macro language. The GetSysConfig function allows macros to get and store System Configuration menu fields. The StrPos function searches one string variable for the first occurrence of another. The UpCase

function converts a string to all uppercase characters. See Users Manual section 7.10 for fully detailed information.

3) Addition of WriteDSPMem and WriteDSPVal functions to macro language. These functions allow macros to access the currently installed DSP board, and allow user-defined DSP code access to internal Hypersignal values and menu values normally communicated to DSP/Analog boards. See also new ClearDSPMem and ClearDSPVal functions. See Users Manual section 7.10 for fully detailed information.

4) Macro language string constants have been updated to allow spaces.

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR93

1) Correction to display in Spectrum Analyzer of transfer function waveform files previously stored by the Spectrum Analyzer (for DSP56001, TMS320C25, and ADSP-2101 based boards).

2) Correction to macro language compiler where assignment statements of form a = -2 + b, or a = +3 - b caused an error.

3) Correction to macro language compiler where the "EXPONENT" constant in PutHeaderValue and GetHeaderValue function calls did not work correctly.

4) Correction to Recursive Filtering and Difference Equations functions for input waveforms with a stored waveform header framesize greater than 32767.

5) Correction to Power Spectra Generation when invoked from a macro language file.

Release Notes, Hypersignal-Macro Series, FEB93

Release notes for Hypersignal-Macro series software in February 1993 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40e, Hypersignal-Acoustic v3.40e, and Hypersignal-Macro NRT v4.40e.

New Features, Hypersignal-Macro Series, FEB93

1) Updates to Hardware Reference Guide and Tutorial. Current dates are January 1993. Users Manual and Software Reference Guide are unchanged (current dates are August 1992).

2) Executable DSP filenames can be indicated in the System Configuration menu. Enter the filename after the board designator in any or all of the first four fields. Examples:

```
ATT32C,dsp32c.out
ZPB34-zpd1007,new32c.out
ARI56,dsp56.lod
LSI25,tms25.out
```

Bug-Fixes/Corrections, Hypersignal-Macro Series, FEB93

1) Work-around in device driver for LSI DSP56001 boards manufactured in UK (i.e. not Spectrum-manufactured version) where second channel in two-channel acquisition or instrumentation operations would sometimes show duplicated samples. The new device driver works with both types of boards.

2) Several enhancements to SYSid file read utility (SYSIDRD.EXE). Can now be run from a macro (SYSIDRD.MAC), accepts both binary and ASCII formats, correctly reads frequency responses with magnitude greater than 1.0, and has more flexible user-interface and file specifications. Hypersignal-Acoustic only.

Release Notes, Hypersignal-Macro Series, DEC92-JAN93

Release notes for Hypersignal-Macro series software from December 1992 through January 1993 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40d, Hypersignal-Acoustic v3.40d, and Hypersignal-Macro NRT v4.40d.

New Features, Hypersignal-Macro Series, DEC92-JAN93

1) Addition of Intelligent Instrumentation ZPD 1007 analog I/O option for basic ZPB34 board selection in System Configuration menu.

2) Addition of MTT Lory DSP4100 system operation. Enter 'MTT32C' in System configuration menu (active in Hypersignal-Nihon only).

Bug-Fixes/Corrections, Hypersignal-Macro Series, DEC92-JAN93

1) Correction to stimulus & response operation when the "monitor mode" has been enabled; problem was manifested as stimulus not ending or repeating properly, or same as when monitor mode was not enabled (which operated correctly).

2) Correction to 2-channel continuous disk record for AT&T DSP3210 boards.

3) Experimental correction to Ariel DSP-96 FFT Generation and iFFT Generation hang-up problem.

4) Correction to DSP96002 iFFT results for all DSP96002 boards.

Release Notes, Hypersignal-Macro Series, OCT92-NOV92

Release notes for Hypersignal-Macro series software from October 1992 through November 1992 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.40a - v3.40c, Hypersignal-Acoustic v3.40a - v3.40c, and Hypersignal-Macro NRT v4.40a - v4.40c.

New Features, Hypersignal-Macro Series, OCT92-NOV92

1) Addition of Spectrum Analyzer improvements listed in 10 SEP 92 versions (see below) for DSP56001-based boards and DSP96002-based boards.

2) Addition of PC-56D ProPort and DatPort driver (Hypersignal-Acoustic only). Enter 'ARI56-D' in System Configuration menu.

3) Macro and external utility to allow time-reversed 3-D Spectrogram viewing (to enable viewing of features in the data "hidden" by high amplitudes that occurred early in time). Enter "freverse" in Macro Manager menu. Hypersignal-Macro EX and Hypersignal-Acoustic only.

4) Macro and external utility to read CADP2 program ETC output ASCII files (CADP2 is modeling/simulation program created by JBL). The macro produces a Hypersignal impulse response time domain waveform. Enter "cadp2rd" in the Macro Manager menu. Hypersignal-Acoustic only.

5) Addition of Ariel DSP-3210 board. Enter 'ARI3210' in System Configuration menu.

6) Further increase in speed of loading for DSP32C-based board COFF files.

7) Increase in speed of continuous transfer from disk to D/A output for TMS320C30-based boards.

8) Addition of Peralex PROTO-56 board. Enter 'PA56' in System Configuration menu.

Bug-Fixes/Corrections, Hypersignal-Macro Series, OCT92-NOV92

1) Correction to Difference Equations function when referring to long x1 and x2 waveforms that contain waveform header exponent<>0.

2) Correction to GetHeaderValue function in macro language when reading waveform header amplitude and framesize values, which are word. Function was reading them as integer, which caused values above 32767 to be read incorrectly.

3) Correction to problem introduced in previous version with pan function in Magnitude and Phase displays (log frequency axis mode only).

4) Correction to real-time filtering when using analog output of TMS320C30-based boards.

Release Notes, Hypersignal-Macro Series, SEP92

Release notes for Hypersignal-Macro series software in September 1992 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.30d - v3.30e, Hypersignal-Acoustic v3.30d - v3.30e, and Hypersignal-Macro NRT v4.30d - v4.30e.

New Features, Hypersignal-Macro Series, SEP92

1) Addition of "start frequency" location in extended waveform header that allows accurate frequency-axis labeling of frequency-zoom results that do not begin at zero frequency. Currently, only the TEFRD utility (Hypersignal- Acoustic only) writes this location, although it is expected other functions will use it in the future (such as the FZOOM macro).

2) Frequency domain displays enabled to display the new "start frequency" value in extended waveform header (if not zero) correctly for trace 1 waveforms.

3) Further enhancements to TEFRD utility (Hypersignal-Acoustic only), including ability to abort operation, better error-checking to discover files not in correct SoundLab format, and correction to operation with full drive and subdirectory specification for the input SoundLab waveform file.

4) New revision of documentation:

- Rev. 3.2 of Users Manual
- Rev. 3.1 of Hardware Reference Guide
- Rev. 2.1 of Software Reference Guide

- Rev. 2.1 of Tutorial

All documentation should have "August 1992" date on front page. All Hypersignal software purchased from Signalogic is now delivered in a three-binder set. The first binder contains the Users Manual, the second the Hardware Reference Guide and Software Reference Guide (separated by a tab divider) and the third the Tutorial.

5) Waveform header exponent increased to 8-bits, and stored in new file header location (see Signalogic DSP Software Reference Guide section 4.1, Hypersignal Waveform File Format), increasing the dynamic range of data that can be represented by Hypersignal waveforms to the following range: 2.93873e-39 to 5.575e+42.

6) Several Spectrum Analyzer improvements:

- Addition of new data type: "impulse response". This option enables an inverse FFT of transfer function output, allowing you to see the time domain impulse response of a system under test. Averaging can be applied. Enter 'I' or 'Inn' in the TRACE1 or TRACE2 fields, where "nn" is the number of frames to average. In this version (3.30d), *this function is currently working only for boards with DSP32C and TMS320C3x DSP chips.*

- Averaging can be invoked for any type of data except for time domain; for example, to see an averaged phase trace, enter 'PHnn', where nn is the number of frames to average. Note: currently, a 'Mnn' or 'Mnn+' entry displays the same data as a 'Pnn' or 'Pnn+' entry.

- The real and imaginary output from a transfer function trace display can be written to disk file using the WRITE command. Answer the prompt to create .IMA and .REA files suitable for inverse FFT processing. This option is in Hypersignal-Acoustic only. NOTE: the real and imaginary data cannot be subjected to averaging. In this version (3.30d), this function is currently installed only for TMS320C3x and DSP32C boards.

- A file input can be simultaneously shown with transfer function display; enter the filename in the TRACE1 field, and specify transfer function display in the FORMAT2 field. The system assumes that the "other" channel than what is shown

in the TRACE2 field should be used as the numerator channel.

- Transfer function display (and its new relative, impulse response display), can be invoked on same-channel setups, where the only difference could be real-time filtering, for example.
- Any FORMAT1 or FORMAT2 entry specifying averaging of linear or log magnitude data ("nn" frames entry after format) and referring to a TRACE1 or TRACE2 entry specifying a waveform file will automatically retrieve the power spectra file (averaged) version of the waveform. A format entry of 'P' (for power spectra) can still be entered, but does not need to be if averaging is entered.
- Single-trace display during dual-trace operation can more easily be specified by either entering '1' or '2' in the FORMAT subfield of the TPL field, or blanking the F1 or F2 field (or using an 'N' entry), depending on which trace should be disabled. Also, this type of entry now disables extra labeling for the trace not being displayed.

7) Stimulus output in Analog Conversion changed so that stimulus repeats immediately after end of stimulus waveform is reached. To deactivate repeat, or increase interval between repeats, the stimulus waveform must be created with as much zero data as necessary appended to end of actual stimulus data.

8) Frequency zoom macro (fzoom.mac) added to diskette #2. An arbitrary segment of bandwidth can be selected for high resolution frequency analysis.

9) Stimulus & response macro (stim.mac) added to diskette #2. A linear sweep sine wave is created and used as a stimulus; the response is cross-correlated with the sweep to extract an impulse response; the macro ends with the frequency response displayed and display controls in manual mode. The sweep length can be chosen (up to 16384 samples) to control frequency resolution.

10) A RESTORE DOS PATH field added to the External Program Config function that allows the system to automatically restore DOS path settings altered by external programs or by users in a DOS shell. The field can be disabled to provide operation as with previous versions.

11) Size of Directory Display data-entry field increased.

12) Power Spectra Generation FRAMES TO AVERAGE field is now interpreted as a percentage when straight averaging is used ('A' entry in METHOD field). Its interpretation with other methods remains unaffected.

13) Sampling rate conversion macro (samconv.mac) speed of execution improved by replacing Parks McClellan design method in interpolation/anti-aliasing filter with Kaiser Window method. Also, the final difference equation in the macro has been modified to remove the significant delay inserted by the longer filters typically produced by the Kaiser Window method.

14) "DOS Shell" command added to macro language. See the Hypersignal-Macro Software series addendum.doc file (distribution diskette #2) for more information.

15) A fourth mode of log amplitude display has been installed in frequency domain file-based displays (Magnitude Display, 3-D Spectrogram, 2-D Spectrograph) that refers to the system value for 0 dB, but does not use the Spectrum Analyzer (S.A.) calibration offset. The modes are now as follows:

REF subfield entry	mode/description
'A'	autoscale; 0 dB is maximum |amplitude| in waveform
'S'	0 dB is system reference; S.A. calibration offset not added
'C'	0 dB is system reference; S.A. calibration offset added
'W'	0 dB is system reference; WH calibration offset added ("WH" is waveform header)

Bug-Fixes/Corrections, Hypersignal-Macro Series, SEP92

1) Correction to directory search on power spectra waveforms in frequency domain displays.

2) Correction to waveform file write function ('W' key) in Waveform Display/Edit display that was not correctly transferring waveform exponent from displayed waveform to new output file waveform, causing amplitude of new output file waveform to be incorrect.

3) Several menu areas corrected that didn't display proper color values when a monochromatic graphics selection had been made from the Graphics/Mouse Config menu.

4) Continuous recording to disk for DSP Research TIGER 30 (with TLC32044 analog I/O option only) updated to discard first A/D points, which contain "circuit warmup" and settling artifacts.

5) Correction to problem in all TMS320C30 board-based real-time filtering in analog I/O-related functions, where repeated "re-starts" of the function (starting from the data-entry menu) would cause the filtering to be intermittent (not always initialized correctly)

6) Correction to type checking in macro language compiler where cases of

int = int / int

were not detected as assignment mismatches, allowing "/" (real division) results to be incorrectly assigned to integer output.

7) The Analog Conversion function has been corrected in macro mode to not return to the data-entry menu after a $RUN command. After the function has completed, more interactive commands can now be processed, and the function can be run again if needed. Use a '$ESC' command to return to the main menu as appropriate.

8) Correction to Correlation function when both input waveform and filter waveform were equal to the maximum filter length (16384).

9) The $INS and $DEL interactive commands now correctly perform waveform insert and delete operations in the Waveform Display/Edit function from a macro. See the "CUT.MAC" example file.

10) The D/A output command now correctly works when invoked from a macro file (using '$D' interactive command).

11) Correction to time data display in overlaid-trace mode in the Spectrum Analyzer, where the trace was not centered about zero in the display area.

12) Setting dual- or overlaid-trace controls to "lock-step" mode in the instrumentation displays now correctly sets both "active trace" indicators.

13) Convolution/Correlation activated for LSI ADSP-2101 boards that have memory upgrade installed (8 kW prog, 12 kW data).

Release Notes, Hypersignal-Macro Series, JUL92-AUG92

Release notes for Hypersignal-Macro series software from July 1992 through August 1992 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.30a - v3.30c, Hypersignal-Acoustic v3.30a - v3.30c, and Hypersignal-Macro NRT v4.30a - v4.30c.

New Features, Hypersignal-Macro Series, JUL92-AUG92

1) Support for the Sonitech Spirit-30 / SAIB (Stereo Analog Interface Box) added. Enter 'SONC30-SAIB' in the System Configuration menu. Hypersignal- Macro supports one- or two-channel operation, line-level input/output, and programmable sampling rates (ranging from 5 to 48 kHz) from standard menus. Although the SAIB supports many additional, powerful functions, including

- programmable selection of input source (line-level, microphone, handset, telephone line)
- programmable data format (8-bit uLaw or ALaw)
- programmable hardware-controlled input gain and output attenuation
- programmable headphone enable/disable, and
- programmable telephone line control and status functions,

these functions currently cannot be controlled from Hypersignal-Macro menus, but must currently be set using two control words stored in the hsmacro.cnf and hsacous.cnf configuration files. See the Hypersignal-Macro Series software addendum.doc file and config.doc files (distribution diskette #2) for more information. NOTE: Hypersignal-

Macro expects the SAIB to be connected to serial port 1 on the Spirit-30 (bottom connector of backplane), allowing Sonitech IC-100 type analog I/O units to be connected to serial port 0.

2) Setup "save" files incorporated into the File Acquisition function, to facilitate re-performing file import of older files and/or files requiring non-standard settings. Menu setup save files are ASCII; the File Acquisition filename extension is '.ACQ'.

3) Maximum value for the framesize setting in File Acquisition and Analog Conversion functions (used only in subsequent post-processing with other functions) increased to 65535.

4) The Display function in the macro language has been modified to begin display in the first line of the System Status area and then use successive lines (up to 6) for display. The next Display command will clear the area and start over at line 1 again. At some future point, it is tentatively planned that scrolling and "ClearDisplay", "GotoDisplay", etc. commands (or similar) may be installed in the macro language to facilitate control over the display area.

5) Amplitude (vertical) scaling in the Waveform Edit/Display function when in log amplitude display mode has been changed to conform with Hypersignal- Macro frequency domain scaling. PgUp scaling (zoom in) now expands the display with the top fixed (instead of the bottom). To see different vertical sections of the waveform display, set the LG subfield value of the AMP SCALING field accordingly.

6) Support for "revision B" firmware on the Motorola ADS56000 development system board. System Configuration menu entry for the ADS56000 system and its analog I/O options remains the same, as Hypersignal-Macro determines the revision level of the firmware automatically.

7) Maximum amount of the impulse response (filter) waveform utilized in the Convolution/Correlation function increased from 8192 to 16384 samples. Stereo impulse response maximum increased from 4096 to 8192.

8) Addition of "LN" and "LG" subfields to the time domain Waveform Display/Edit AMP SCALING field. Allowing entry of both linear and log values eliminates the need to change this field every time the time domain amplitude display mode is changed.

9) Addition of "amount per color" read-out in 2-D Spectrograph display in linear display mode. Previously, this read-out appeared only in log display mode.

10) New, external "TEFRD" utility that reads TEF20HI analyzer TDS (frequency domain) and ETC (time domain) files into Hypersignal format. Use either the TEFRD.EXE utility directly or the TEFRD macro from inside Hypersignal (Hypersignal-Acoustic only). NOTE: the ETC output of this utility is NOT adjusted for the sampling rate conversion performed by the TEF20HI, and does NOT necessarily depict reflections and other physical phenomenon accurately.

11) Macro Language Improvements:

- Input parameters (#1 through #6) can now be passed in the HSM batch file command line, after a macro filename. For example, invoking the command HSM fname.mac #27 #tempest from the DOS command line, a batch file, or from another program will invoke Hypersignal-Macro (or other version, depending on the batch filename), cause the macro file "fname" to compile/run immediately, and pass the strings "27" and "tempest" to the first two input parameter fields in the macro manager menu. The "#" symbol MUST precede the actual parameter value.

- External programs (user-defined programs) can now be invoked from macro language files by either their current Ext Program Config menu labels, or the following generic commands: User-Defined Time 1, User-Defined Time 2, User-Defined Freq 1, User-Defined Freq 2, User-Defined Util 1, or User-Defined Util 2. The generic commands were added because in some cases the Ext Program Config menu needed to be configured from the macro file, at run-time; thus, program names might not be known to the program at compile time. Also: any menu parameters entered after a User-Defined program invocation are now treated as command-line values passed to the external program. Of course, this only works if the external program accepts command-line values. Up to 10 menu parameters can be entered after a User-Defined program invocation. Remember to always include an "endfunc" statement after any menu command in a macro file.

- PutHeaderValue(filename, position, value) and PutDataValue(filename, position, value) functions have been installed. Filename should specify a string variable or constant. Position should be specified in words--see Signalogic DSP Software Reference Guide section 4.1, Hypersignal Waveform File Format. Value should be an integer or real string variable or constant.

- var = GetUserSetup(N) function has been installed. Var should be a string variable. N should specify the User Setup area parameter to be returned, ranging from 0 to 7. GetUserSetup always returns string values.

12) New, external "FORMANT" utility that extracts formants from frequency domain waveform files (presumably speech files) and creates a new magnitude file as output showing the extraction.

13) '-NN' clock rate entry is now possible following DSP/Acquisition board entry in the System Configuration menu. NN should be a value in MHz, and is intended for boards which

- base their analog sampling rate on the main DSP clock, typically using an integer division, or submultiple, method

- are available in more than one clock rate version

For example, the Intelligent Instrumentation PCI20202C is a TMS320C25-based board and comes in three speeds: 28 MHz, 40 MHz, and 50 MHz. Default entry of 'PCI202C' would specify 28 MHz operation (so would 'PCI202C-28'). Entry of 'PCI202C-50' would specify 50 MHz operation. As another example, the DSP Research Tiger-30 board comes in 33.21 and 40 MHz versions, and the AIC analog I/O option uses these rates divided by 4 as a master input clock. Blank (default) entry is highly recommended unless you are absolutely sure you have a non-standard clock rate board.

Bug-Fixes/Corrections, Hypersignal-Macro Series, JUL92-AUG92

1) A check has been installed to prevent AMP SCALING field entry in frequency domain displays to be set such that top and bottom amplitude values can be equal (except for zero values, which, as before, are the default entry and are interpreted as autoscaling).

2) Correction to stimulus & response function for all TMS320C30-based boards where a filter filename entered in the Analog Conversion menu did not actually enable filtering.

3) Correction to storage of amplitude value in waveform headers by Analog Conversion and File Acquisition of integer data with minimum negative value of -32768.

4) Repair to the non-interactive version of the WaitForKey function in the macro language.

5) Correction to accelerated functions invoked from macro language files for the Sonitech Spirit-30 board. A reset timing problem caused this board to produce invalid results in macro mode (accelerated functions only).

6) Correction to editing in the Waveform Edit/Display function when in log amplitude display mode.

7) Correction to accelerated Cross Correlation function (all DSP boards) problem where starting point was incorrect (extra zeros were inadvertently attached to the beginning of the input waveform).

8) Correction to Parks-McClellan design where recent improvements had introduced a problem preventing design of all-pass delay filters.

9) Correction to results of the Convolution/Correlation and Recursive

Filtering functions when intermediate overflow occurred. In such cases, the waveform exponents were being calculated correctly, but not added to a previously existing waveform exponent, if any. Also, the scaling prompts (asking for permission to scale) have been removed from these functions, as they are now redundant due to the new waveform file header exponent system.

10) Correction to transfer function operation for all DSP56001-based and TMS320C25-based DSP/Acquisition boards.

11) Corrections to macro language compiler:

- string variable comparisons in "if-then" and "while"
- improved type-checking in the "a ? b" portions of the "if a ? b then", "while a ? b", and "for a ? b" constructs

12) Correction to device driver for Ariel DSP-32C boards, which was sometimes incorrectly sizing the total amount of memory on the board, producing a "data memory less than 1024K" message after sizing the

DSP-32C board memory. The problem had to do with timing of the host machine and late-model revision (D, E, and F) DSP-32C boards. Also, automatic detection and utilization of the DSP-32C's 16-bit transfer mode has now been installed. Hypersignal-Macro will degrade to 8-bit mode if the DSP-32C is installed in an 8-bit slot or the 16-bit mode jumper on the DSP-32C is removed.

13) The constant values shown in section 7.2.4 (page 7-7 of revision 3.1) of the Users Manual are incorrect. The values should be as follows:

AMP	0
FR	1
FS	2
FFTORD	3
LEN	4
OVERLAP	5
NUMCHAN	7
OFF	0
ON	1
FILE	2
PI	3.141529...

The constant FFTlen has been removed. If you need the FFT length of a waveform file, first access the FFT order, then calculate FFTlen as:

```
FFTlen = Ln(2)
FFTlen = FFT_order*FFTlen
FFTlen = Exp(FFTlen)
```

Also, "FFTlen" as shown on page 7-35 of revision 3.1 should be ignored.

14) Writing time data traces from the Spectrum Analyzer display to (time domain) waveform files has been corrected.

15) Transfer function entry in the Spectrum Analyzer function has been changed so that display is ALWAYS the ratio of TRACE1/TRACE2. Thus, by entering 'Hnn+' in either the F1 or F2 fields, either the test-system output or input can be viewed

simultaneously with the log magnitude of the system's frequency response. By reversing the physical channel entry in the TRACE1 or TRACE2 fields, the ratio can be reversed.

16) Support for revision B of the DSP Research "BB71" external analog I/O unit support added (to account for interface cable change made by DSP Research from revision A to revision B). Enter 'DRIC30-BB71' or 'DRIC30-BB71B' in System Configuration menu. Enter 'DRIC30-BB71A' for revision A systems.

17) System Configuration designators for the Ariel PC-56 and DSP-56 have been switched to be consistent with other Ariel PC- and DSP-board pairs. Use an 'ARI56' or 'ARI56-A' entry for the DSP-56, and an entry of 'ARI56-B' for the PC-56.

Release Notes, Hypersignal-Macro Series, FEB92-JUN92

Release notes for Hypersignal-Macro series software from February 1992 through June 1992 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.20a - v3.20e, Hypersignal-Acoustic v3.20a - v3.20e, and Hypersignal-Macro NRT v4.20a - v4.20e.

New Features, Hypersignal-Macro Series, FEB92-JUN92

1) New revision of documentation:

- rev. 3.1 of Users Manual
- rev. 3.0 of Hardware Reference Guide
- rev. 2.0 of Software Reference Guide
- rev. 2.0 of Tutorial

2) 'Shift-2' or 'Shift-1' can be used to place instrumentation displays in a mode where scaling and offset commands apply to both traces of a dual-trace display simultaneously, instead of only to the active trace.

3) 'O1' and 'O2' can be entered in the dual-trace control subfield of all applicable displays to display only one trace in overlaid-trace mode. Effectively, this allows dual-trace operation, but with only one trace

displayed. For example, when viewing transfer function display in the Spectrum Analyzer, dual-trace operation is required, but it may be desirable to maximize the viewing area with only the transfer function result and not any additional data format.

4) All DSP chip Source Code Interfaces updated to include both the register value needed for external clock and the actual sampling rate (in Hertz) as part of the shared variable list initially set by the host PC. This allows the high-level software to set a hardware-dependent value for external clock (if appropriate), and also set the desired sampling rate in Hz, allowing programmers access to this information in the DSP Source Code Interfaces. All interfaces now contain a value called "FS_MODE" for the hardware register value, and a value called "FS_VALUE" for actual sampling rate.

5) True "previous page" operation (using 'PgUp' key) added to Directory Display menu function.

6) Further improvements and enhancements to DSP96002 drivers, including consolidation of Ariel and Spectrum DSP code.

7) Addition of EXPONENT EXPAND field to the ASCII Export function, allowing the waveform data to be optionally multiplied by a scaling factor corresponding to the exponent stored in the waveform header. In this case, the exponent in the waveform header is then exported as unity (equal to 1). For floating-point export especially, this allows waveform data to be exported with no implicit overall exponent, facilitating their use with other programs.

8) 32-bit integer "IOC register" values added to the configuration file for each DSP32C board supported, so that IOC register settings can be controlled at a high level, rather than changing DSP32C source code. See the "config.doc" file on Hypersignal-Macro Series software distribution diskette #2 for location of these values.

9) Addition of CAC AC5-series "DBD" dual 16-bit input and output daughterboard support.

10) New board driver finalized: Ariel DSP-96 board. Enter 'ARI96' in System Config menu.

11) New board driver added: "BB71" 4-channel analog I/O option added to DSP Research Tiger-30 board. Enter 'DRIC30-BB71' from System Config menu.

12) Block-floating point support installed in Difference Equations.

13) Spectrum (LSI) DSP96002 system board driver finalized. Enter 'LSI96' in System Config menu.

Bug-Fixes/Corrections, Hypersignal-Macro Series, FEB92-JUN92

1) Correction to Difference Equation stack problem when used in macro mode.

2) Correction to LSI DSP96002 FFT Generation hang-up problem on slower machines.

3) Correction to stereo convolution.

4) Change to high-level DSP96002 driver that eliminates need for PAL change when using later revision LSI DSP96002 boards. V3.20a through 3.20c worked with V3 board PALs and below, but not with V4 PALs. A software "work around" was possible that allowed the software to operate in both cases.

5) Correction to ASCII Export function when exporting and importing waveform data files with extended headers (proper number of header values were not being written out correctly).

6) Correction to FFT Generation operation in macro mode when using LSI ADSP-2101 board.

7) Correction to transfer function operation in the Spectrum Analyzer function with all TMS320C30-based boards.

8) Correction to use of Analog Conversion function from during macro record mode ("learn" mode). The menu command section was being written out before the "BEGIN ACQUISITION" prompt was answered, instead of afterwards, resulting in macro files that wouldn't "playback" correctly.

9) Correction to accelerated functions invoked from a macro file when using the LSI (Spectrum) TMS320C30 board. A reset timing problem caused this board to produce invalid results in macro mode (accelerated functions only).

10) Correction to Ariel DSP-32C D/A output sampling rate problem with low sampling rates (less than 16 kHz).

11) Correction to transfer function display in Spectrum Analyzer for all boards.

12) Correction to LSI DSP96002 system board interrupt service routine context save problem (intermittent stack problem).

13) Major re-write of DSP96002 code generation for filters.

Release Notes, Hypersignal-Macro Series, DEC91-JAN92

Release notes for Hypersignal-Macro series software from December 1991 through January 1992 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.10 - v3.10d, Hypersignal-Acoustic v3.10 - v3.10d, and Hypersignal-Macro NRT v4.10 - v4.10d.

New Features, Hypersignal-Macro Series, DEC91-JAN92

1) Macro Manager menu now invoked with 'F3' key from main menu (and Directory Display function re-installed as a menu selection).

2) A record mode has been installed ('F4' key from main menu) that allows the user to step through a sequence manually and have the program automatically generate the appropriate macro file for later use.

3) Block-floating-point exponent now used in both time domain waveforms as well as frequency domain waveforms. This allows Hypersignal to acquire and create waveforms that contain floating-point data ranging from to 3.90625e-03 to 4.194176e+06. Functions newly affected include File Acquisition, time domain functions, Inverse FFT, and Code Generation.

4) "Inverted filter output" function in the Spectrum Analyzer that writes out inverted magnitude traces in FIR filter specification file format. After designing the FIR filter to match the inverted trace, the filter can be applied in real-time to produce a "compensated" frequency response that is more or less flat. Hypersignal-Acoustic only.

5) Transfer function display in Spectrum Analyzer now shows 0 dB as center of trace, with +N and -N dB above and below, where N is controlled by the vertical scaling commands ('PgDn' and 'PgUp' keys)

6) Improvements to filter design, including:

- maximum length of Kaiser Window filters increased to 4096
- maximum length of Parks-McClellan filters increased to 769
- passband ripple value now must be entered for Steiglitz IIR filters (in dB, as with other design methods; a 0 value will cause existing designs to be unchanged)
- new, "two-level" error entry for Steiglitz IIR arbitrary method, which allows initial pole-zero pattern (initial convergence) to be established more easily
- impulse response waveform files created by the Filter Construction functions have been changed so that an FFT will produce a frequency response indicating the absolute position of 0 dB (unity gain), as opposed to a relative position. Thus, returning to the filter design display will show exact filter passband gain relative to 0 dB. Further implied by this change is the ability to create arbitrary filter designs with gain more or less than 0 dB, by creating the desired response on the new scale. This change has other ramifications for filter display throughout Hypersignal. A Magnitude Display of a filter response now shows 0 dB as being the same for autoscale or system calibration (default) modes of display. Also, the Spectrum Analyzer will show filter responses from file input correctly relative to 0 dB and to simultaneous analog input.
- a "tolerance region toggle" command has been installed in the graphical filter design functions ('T' key). Especially useful for arbitrary designs, this command can be used to show the original menu specifications for comparison with designs have been modified and/or their frequency responses.

7) "GetDateTime" function added to macro language.

8) New board driver added: CAC AC0 series, including dual ADC and codec daughterboards. Enter 'CAC32C-ADC' and 'CAC32C-CODEC' in System Config menu.

Bug-Fixes/Corrections, Hypersignal-Macro Series, DEC91-JAN92

1) Removal of 32767 FRAMESIZE limit in Difference Equations.

2) Correction to long-term problem in instrumentation displays where display traces using waveform files as input were not correctly written to disk by the WRITE function ('W' key).

3) Correction to long-term problem in accelerated convolution/correlation using TMS320C25-based boards where filters longer than 256 points were not applied correctly.

4) Correction to long-term problem in Spectrum Analyzer transfer function for DSP32C boards, which was not being calculated correctly.

5) The following macro language problems have been corrected:

- error message when a waveform file needed by a DSP or display function could not be found during macro execution was not correct
- menu functions missing an "endfunc" statement did not produce an error message that was always correct or indicated the correct line number
- assigning a Macro Manager field to a string variable (e.g. strvar = #1) did not function correctly
- some type conversion problems for real variables
- some "loopholes" in type checking, where some type mismatches were not detected, including a constant on the lefthand side of an "="
- parameters could not be passed to procedures by "value" (e.g. constants, Macro Manager menu references, @ function results)
- strings could not be concatenated (added together)
- assignment statement of form a = b + #N would compile, but a = #N + b would not
- strings returned as conversions from real numbers are now trimmed for leading spaces, trailing mantissa zeros, and

leading exponent zeros, to make them suitable for use in Difference Equation menu fields

- automatic type conversion for output of the GetHeaderValue and GetDataValue functions was not being performed--the output of these functions can now be placed in either integer or real variables, but real variables are suggested for waveform values and for the "Max Amplitude" value from a GetHeaderValue(filename, Amp) call

6) A slight gain problem with IIR lowpass and highpass filters with even filter orders and IIR bandpass and bandstop filters with filter order / 2 equal to an even number has been corrected. The problem was ripple that could occur such that the minimum ripple was at 0 dB instead of the maximum ripple.

7) The tracking crosshair cursor in dual-trace waveform displays has been corrected in the following case: trace 1 shows a waveform whose total length is less than the display and also less than the trace 2 waveform, and the cursor would not read out trace 2 values.

8) Correction to 2-D Spectrograph print-out from monochromatic displays (such as Hercules board, or IBM CGA graphics adaptor).

9) Further correction to frequency domain displays resulting from complex time domain data, where every so many frames would display a zero frame, or uninitialized frame.

Release Notes, Hypersignal-Macro Series, JUL91-NOV91

Release notes for Hypersignal-Macro series software from July 1991 through November 1991 cover Hypersignal-Macro RT and Hypersignal-Macro EX v3.00 - v3.00g, Hypersignal-Acoustic v3.00 - v3.00g, and Hypersignal-Macro NRT v4.00 - v4.00g.

New Features, Hypersignal-Macro Series, JUL91-NOV91

1) Macro file language. Enter the name of a desired macro file to compile and execute in the "Macro Manager" menu selection.

Entering the last field or pressing 'Ctrl-Enter' in this menu will cause the macro to compile if necessary, and execute. Also, macro files can be executed remotely by another program, by passing the macro name in the Hypersignal command line. Macro language files allow all Hypersignal functions to be invoked (and controlled by "passing" menu parameters), "if-then-else" constructs, loops, procedures, variables (integer, real, string) that can be manipulated and then used as input to menu fields in order to control Hypersignal operation dynamically, scheduling (using system clock), math functions, and many other built-in commands and functions. By passing "parameters" to a macro via the Macro Manager menu, macros become re-usable, functioning as "Hypersignal procedures". An excellent example of this is illustrated in the macro file "SAMCONV.MAC", included on distribution diskette #2. SAMCONV.MAC converts a waveform sampling frequency either up or down, by invoking Difference Equations, FIR Filter Construction, and Convolution in the correct sequence required to "interpolate" or "decimate". Simply by changing the input and output waveform names and "stretch" and "contract" factors that make up the input parameters, this macro can be used over and over without and further editing. Essentially, the Macro Manager menu becomes a "virtual menu" for many different functions. To further enhance the virtual menu concept, the menu labels can also be customized for each macro.

2) New Users Manual. Completely reorganized, revised and updated.

3) Completely revised on-line Help. Reduced in size by 1/3, as much of detailed, non-essential information has been placed in Users Manual. Overall, the on-line Help has been made much easier to use, more concise, and more focused on information needed "at the moment" when using the software.

4) Updated Hardware Reference Guide. Updated for some existing boards and for all new boards.

5) Vertical limit (top and bottom display values) control in frequency domain display functions; either autoscale (zero entry) or explicit entry possible.

6) Explicit entry of vertical limits in frequency domain displays (see 5, above) causes single/dual waveform displays to be displayed relative to a "reference dB value", which can be set via the Spectrum Analyzer analog input calibration function or in the configuration file. The

default value assigns 32767 (full-scale input from a 16-bit A/D converter) to 0 dB.

7) Dual-trace crosshair cursor with frequency and linear/log magnitude read-out installed in Spectrum Analyzer function.

8) Calibration function has been installed in real-time Spectrum Analyzer that sets the system "reference dB value" and the engineering units to be assigned to this value (in dB). Use the up and down arrow keys or mouse to position the crosshair cursor on the peak of the reference tone and press the 'E' key ("engineering units"). A prompt will appear asking you for the value to use in dB.

9) Overlaid waveform display in Waveform Display/Edit and Digital Oscilloscope (time domain), and Magnitude Display, Phase Display and Spectrum Analyzer (frequency domain) functions. Enter 'O' in the FORMAT,PLOT field for overlaid dual-waveform display and 'D' for dual waveform display (the default). For Digital Oscilloscope, enter 'O' or 'D' in the first part of the FM,PLT,GRD field. For Spectrum Analyzer, enter 'O' or 'D' in the second part of the TPL field. Overlaid display is not active with map mode.

10) Addition of "limited imaginary" operator 'j' to Difference Equations. Equations can be entered in form a+jb or a+j*b, causing an imaginary component to be generated and the resulting output waveform to be complex. Currently, this is the only form in which 'j' is allowed; in other words, the program does not treat it as a true mathematical constant. For example, SQR(j) will not produce -1.

11) File Acquisition function modifications:

- complex waveform input is now allowed
- u-Law or A-Law expansion of incoming data can be achieved via an 'L' or 'A' attribute entry after the FORMAT field entry

12) Crosshair-cursor with frequency read-out has been added to 2-D Spectrograph display function. Linear or log frequency axis read-out.

13) A "mark section" command has been added to Waveform Display/Edit function. Use of the 'M' key writes out target window edges (or display edges if window not shown) to ASCII "mark" file. Mark files can contain sequence of marked waveform sections for macro or external processing.

14) Several acoustic-audio enhancements, including:

- minimum log frequency display value (low-end cutoff) control in all frequency domain display functions, including 2-D Spectrograph
- graphical display and functional improvements to 1/N octave band display
- Spectrum Analyzer calibration and engineering units (see 8, above)
- Log amplitude display option in Waveform Display/Edit function, including both data-entry menu field and log/linear toggle command inside display ('S' key)
- Schroeder integration macro that produces time domain output (Hypersignal-Acoustic only)
- stand-alone utility that reads SYSid complex output files (Hypersignal-Acoustic only)
- snap-in real-time filtering can apply arbitrary time domain files as filters--intended for "room auralization" convolution in real-time (Hypersignal-Acoustic only)

15) Snap-in filtering in Digital Oscilloscope, Spectrum Analyzer, and Analog Conversion now look for a time domain waveform (.TIM extension) if no standard .IIR or .FIR filter coefficient file is found. Thus, these functions can now be used also to convolve arbitrary impulse responses with incoming analog data in real-time on the DSP board.

16) Analog Conversion continuous D/A output from disk "infinite loop" option. Enter 'GL' to cause output waveform file to repeat until until you press 'ESC' key.

17) Six times faster downloading for DSP boards using COFF file format (DSP32C, TMS320C30, TMS320C25).

18) Relative waveform file paths can now be used (DRIVE entry blank, and SUBDIRECTORY entry = ".").

19) New board drivers added:

- DSP Research Tiger-30. Enter 'DRIC30' in System Config menu.
- Techron TEF-20. Enter 'TEF20' in System Config menu (Hypersignal-Acoustic only).

- Ariel PC-32C with ProPort. Enter 'ARI32C-b' in System Config enu (Hypersignal-Acoustic only).
- Burr-Brown ZPB34 and ZPB100 speech board combination. Enter 'ZPB34-ZPB100' in System Config menu.

Bug-Fixes/Corrections, Hypersignal-Macro Series, JUL91-NOV91

1) Further modification to LSI TMS320C30 device driver that corrects unreliable operation of the LSI TMS320C30 system board when used with the LSI memory expansion board.

2) Further modification to frequency domain displays when displaying FFT output data that resulted from complex time domain input data.

3) Correction to LSI ADSP-2101 driver that caused hangup when R/I data is requested in the FFT Generation function.

4) Correction to LSI ADSP-2101 driver problem where overflow was sometimes not detected in FFT Generation function, and resulting frequency domain files were garbage.

5) Correction to NEC 77220 driver that caused problems with iFFT results. Also, correction to NEC 77220 source code for forward FFT processing, and overflow detection.

6) Full activation of trace 1/2 selection in Magnitude Display and Phase Display functions. Continued improvement to trace 1/2 options in Waveform Display/Edit function.

7) Correction to some dual-trace waveform editing problems with stereo and complex waveforms in the Waveform Display/Edit function.

8) Change to Digital Oscilloscope offset function (up and down arrow keys) so that y-axis amplitude units track correctly with vertical waveform movement. The offset function has also been activated for time-domain traces in the Spectrum Analyzer function. All other data formats in Spectrum Analyzer (non-time formats) show crosshair cursor in response to up/down arrow keys or mouse.

9) Minor corrections to DSP96002 code generation.

10) Fix to long-time bug in Spectrum Analyzer where EMS print-outs would cause run-time error 207.

11) Fix to long-time bug in Difference Equations caused by uninitialzed variable. Symptom was rare, random run-time error 207 for no apparent reason.

12) Fix to long-time bug in FIR Filter Construction where software, on rare occasion, would freeze up after displaying "Generating Parks-McClellan Coefficients" message.

3.3.2 Revision History for DSPower-HWLib Software

NOTE: Use the Browse (">>" and "<<") buttons to scroll forward and backwards in the release notes.

Most Recent Release Notes

New Features, Hypersignal-Macro Series, MAR95

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR95

New Features, DSPower-HWLib, MAR95

Bug-Fixes/Corrections, DSPower-HWLib, MAR95

New Features, DSP Source Code Interface, MAR95

Bug-Fixes/Corrections, DSP Source Code Interface, MAR95

New Features, DSPower-Block Diagram, APR95

Bug-Fixes/Corrections, DSPower-Block Diagram, APR95

Release Notes, DSPower-HWLib, MAR95

Release notes for DSPower-HWLib software in February 1995 through present cover DSPower-HWLib v1.1

New Features, DSPower-HWLib, MAR95

1) Added Microsoft Visual C/C++ 1.5 project files (.mak) and WATCOM C/C++ v10.0 project files (.wpj).

2) Subdivision of engine functions into enmgr.dll and renaming of hwsel.dll to hwmgr.dll. This organization is in preparation for first release of splib.dll, which is DSPower-SPLib (signal processing library) software. Error message also reorganized between enmgr.h, hwmgr.h, and hwlib.h include files.

3) Added DSExecEngineFunction call to invoke arbitrary engine functions. Included execfunc.cpp source code example to illustrate use of this call.

4) Changed format of DSCalcSampFreq call to account for differences in Borland C/C++ v4.5 and Microsoft Visual C/C++ v1.5 compiler in returning a double from a function.

5) Renaming of DSEnableStatusWindow and DSDisableStatusWindow calls to DSShowEngMgrStatusWindow and DSHideEngMgrStatusWindow. DSAddEngMgrStatusLine now returns the window handle to the status window.

Bug-Fixes/Corrections, DSPower-HWLib, MAR95

1) Corrected internal hwmgr.dll problem concerning location of hwsetup.lst path. This problem was preventing user programs from being run from arbitrary locations other than \dspower\hwlib.

2) Made DSP Engine timeouts variable depending on nature of DSP Engine calls. Increased DSP Engine timeout value for DSEngineOpen call, to account for reports of timeout on 25 MHz 386 machines.

3.3.3 Revision History for DSPower-SPLib Software

This section not available yet.

NOTE: Use the Browse (">>" and "<<") buttons to scroll forward and backwards in the release notes.

Most Recent Release Notes

New Features, Hypersignal-Macro Series, MAR95

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR95

New Features, DSPower-HWLib, MAR95

Bug-Fixes/Corrections, DSPower-HWLib, MAR95

New Features, DSP Source Code Interface, MAR95

Bug-Fixes/Corrections, DSP Source Code Interface, MAR95

New Features, DSPower-Block Diagram, APR95

Bug-Fixes/Corrections, DSPower-Block Diagram, APR95

3.3.4 Revision History for DSP Source Code Interface Software

There are two versions of DSP Source Code Interface software: source code math and DSP functions, ISRs, and operating modules necessary to provide Hypersignal-Macro series functionality, and source code that provides additional functionality for other Signalogic DSP Software components. For a revision history list of DSP Source Code Interface software through March 1995, see section 3.3.1 above, Revision History for Hypersignal-Macro Series Software. For revisions after this point, see this section, in which each release note section indicates which Signalogic DSP Software components are affected.

Notes

1. The version number of DSP Source Code Interface software starts with 5.0 below. This is an arbitrary decision made necessary because changes no longer necessarily track exactly with releases of Hypersignal-Macro series software.

2. Revisions affecting Hypersignal functionality also apply if Hypersignal is being used as a DSP Engine, for example by DSPower-HWLib or DSPower-Block Diagram software.

3. Changes are not necessarily made to all supported DSP devices at the same time. Revisions should indicate which devices are affected.

4. An NDA is usually required for use of the DSP Source Code Interfaces. See section 1.2.3, DSP Source Code Interface Software Summary, and chapter 4, Using DSP Source Code Interface Software, for more information.

NOTE: Use the Browse (">>" and "<<") buttons to scroll forward and backwards in the release notes.

Most Recent Release Notes

New Features, Hypersignal-Macro Series, MAR95

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR95

New Features, DSPower-HWLib, MAR95

Bug-Fixes/Corrections, DSPower-HWLib, MAR95

New Features, DSP Source Code Interface, MAR95

Bug-Fixes/Corrections, DSP Source Code Interface, MAR95

New Features, DSPower-Block Diagram, APR95

Bug-Fixes/Corrections, DSPower-Block Diagram, APR95

Release Notes, DSP Source Code Interface, MAR95

Release notes for DSP Source Code Interface software in March 1995 through present cover v5.0.

New Features, DSP Source Code Interface, MAR95

1) Added dynamic MLS sequence generation to DSP5600x source code. Affects Hypersignal version.

2) Added programmable output attenuation capability to Sig32C-8 board DSP32C analog I/O code. Affects Hypersignal version.

3) Added first version of TMS320C5x source code; initial support is for Innovative Integration PC50 board. Affects Hypersignal version.

Bug-Fixes/Corrections, DSP Source Code Interface, MAR95

1) Corrected gain problem in Sig32C-8 board DSP32C analog setup code. Affects Hypersignal version.

2) Added dead-start calibration routines to Tahiti board DSP5600x analog setup code. Affects Hypersignal version.

3.3.5 Revision History for DSPower-Block Diagram Software

NOTE: Use the Browse (">>" and "<<") buttons to scroll forward and backwards in the release notes.

Most Recent Release Notes

New Features, Hypersignal-Macro Series, MAR95

Bug-Fixes/Corrections, Hypersignal-Macro Series, MAR95

New Features, DSPower-HWLib, MAR95

Bug-Fixes/Corrections, DSPower-HWLib, MAR95

New Features, DSP Source Code Interface, MAR95

Bug-Fixes/Corrections, DSP Source Code Interface, MAR95

New Features, DSPower-Block Diagram, APR95

Bug-Fixes/Corrections, DSPower-Block Diagram, APR95

Release Notes, DSPower-Block Diagram, APR95

Release notes for DSPower-Block Diagram software in March 1995 through present cover DSPower-Block Diagram v1.1

New Features, DSPower-Block Diagram, APR95

1) Added improved toolbar interfaces to instrument and display blocks.

3) Added more fly-over Help features, including context-sensitive Help button.

4) Added worksheet toolbar preference options (standard MDI, vertical, floating).

5) Added option for up to eight (8) system library and user library locations to be in use.

Bug-Fixes/Corrections, DSPower-Block Diagram, APR95

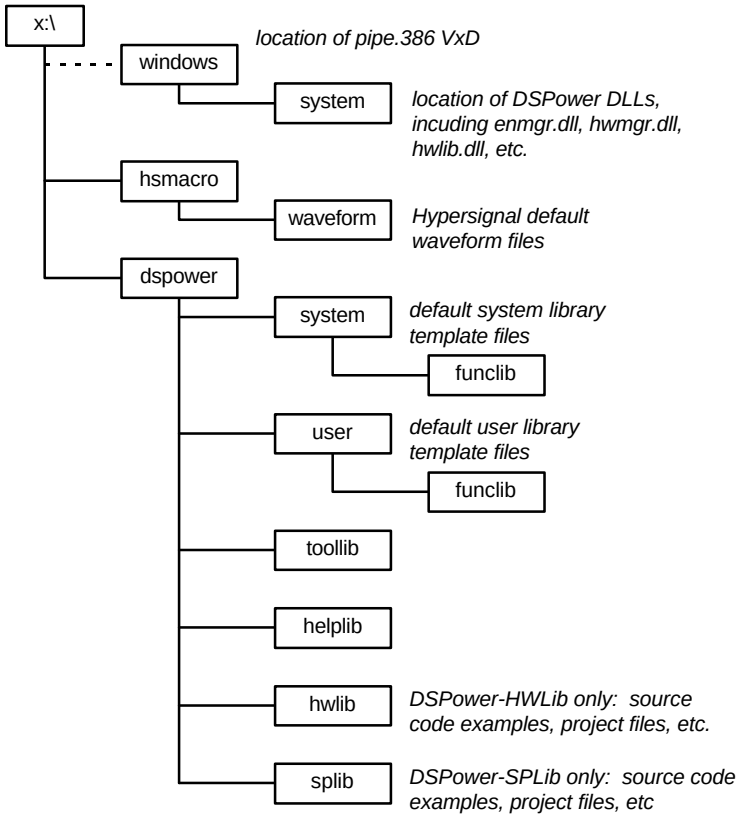
1) Corrected numerous diagram saving and retrieving problems.

3.4 Directory Structure Chart

In the directory structure chart below, Signalogic DSP Software components are shown as they are stored in general relationship to one another. There can be many exceptions to this; for example, the name "dspower" is only a default suggestion. Also, "hsmacro" should be replaced by "hsmacnrt", "hsacous", etc. depending on which Hypersignal-Macro series package was installed, if any (see section 3.2.5, Installing and Configuring Hypersignal for User Mode Operation).

The root drive is shown as "x:\", which would be "c:\", "d:\", a network drive, etc. after actual installation. Also, the "windows" subdirectory may not be located on the same drive as the Signalogic software.

Note that DSPower-HWLib and DSPower-SPLib components are installed separately, a "dspower" subdirectory is still created, although other segments of this subdirectory having to do with DSPower-Block Diagram may not be created.



General Topics

Media and Disk Space Requirements

Documentation and Media You Should Have Received

Before You Install

Installing Hypersignal-Macro Series Software

3.5 Uninstalling

This section not available yet.

Notes: